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Surveillance for Selected Public Health Indicators Affecting Older Adults — United States

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FOREWORD

As a nation, the United States is literally growing older. Persons aged ≥65 years constitute the fastest-growing segment of the U.S. population. Because aging has been associated with increased prevalence of chronic disease, disability, and death, a public health goal for older adults is to maintain health, independence, and function. Health promotion efforts can help to accomplish that goal; however, such efforts traditionally have targeted only younger persons (e.g., public education to prevent smoking among young adults and campaigns to lower cholesterol and increase exercise for middle-aged persons). CDC seeks to expand the traditional scope of health promotion to include older adults, specifically by initiating efforts to prevent ill persons from becoming disabled; to maintain capacity in frail elderly persons; and to enhance functional level in all persons, not just currently healthy ones.

Although public health interventions have been credited with the increase in life expectancy among U.S. residents, other important public health missions include improving health and quality of life during those years of extended life. To enhance these interventions, efforts to expand the scope of health promotion to the elderly must begin with surveillance.

During the preceding 40 years, public health surveillance at CDC has evolved and expanded from activities that focus primarily on the prevention and control of acute infectious diseases to a much broader focus, including chronic diseases, injuries, risk factors, and health practices. Surveillance data can be used to identify needs, inform policy, and guide action to improve the health status of older adults. Although some infectious disease agents, such as *Streptococcus pneumoniae* (pneumococcus) and influenza virus, are major causes of morbidity and mortality among older adults, other public health indicators affect this population over a longer duration, negatively influencing health and quality of life. This publication focuses on several public health indicators affecting this population: surveillance; leading causes of morbidity and mortality; injuries and violence; use of health-care services; five health risks; and sensory impairment, activity limitation, and health-related quality of life. Publication of this collection of surveillance summaries focuses needed attention on some of the health concerns affecting older adults and will stimulate additional research and reports on other public health indicators affecting this population. The surveillance summaries in this publication reflect CDC's participation in the United Nations' celebration of the International Year of Older Persons and further commits our efforts to improving the health status of older adults.

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*Abbreviations

ATSDR	Agency for Toxic Substances and Disease Registry
CIO	Centers/Institute/Offices
EPO	Epidemiology Program Office
IHPO	International Health Program Office
NCCDPHP	National Center for Chronic Disease Prevention and Health Promotion
NCEH	National Center for Environmental Health
NCEHIC	National Center for Environmental Health and Injury Control
NCHSTP	National Center for HIV, STD, and TB Prevention
NCID	National Center for Infectious Diseases
NCIPC	National Center for Injury Prevention and Control
NCPS	National Center for Prevention Services
NIOSH	National Institute for Occupational Safety and Health
NIP	National Immunization Program

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Overview: Surveillance for Selected Public Health Indicators Affecting Older Adults — United States

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The United Nations has proclaimed October 1, 1998, through December 31, 1999, as the International Year of Older Persons (IYOP). Federal agencies are working together to sponsor IYOP activities in the United States. To commemorate the goals of IYOP, CDC has published these surveillance summaries to describe important health issues and to highlight the role of public health surveillance for older adults aged ≥65 years in the United States. Although older adults are the focus of these surveillance summaries, persons aged 55–64 years have also been included, when data were available, as a comparison group.

The concepts and methods of public health surveillance are useful for meeting information needs for and about older adults in the United States. Surveillance, a core public health activity, is defined by CDC as the "ongoing, systematic collection, analysis, and interpretation of health data essential to the planning, implementation, and evaluation of public health practice, closely integrated with the timely dissemination of these data to those who need to know. The final link of the surveillance chain is the application of these data to prevention and control practices" (*1*). Public health interventions have been the major factor underlying the >30-year increase in life expectancy since 1900 (*2*). Surveillance provides data to support the U.S. public health mission of improving health and quality of life as well as extending lives.

Public health surveillance has evolved and expanded during the preceding 40 years from activities that focused primarily on the prevention and control of acute infectious diseases to include chronic diseases, injuries, risk factors, and health practices (*3*). As a part of public health practice, surveillance is used to identify needs, inform policy, and guide action. Public health surveillance for older adults should include a spectrum of activities, including estimating disease, disability, and service-use rates; identifying older adults who are at high-risk and underserved; and studying risk factors for illness and disability (*4*). As with chronic and infectious disease surveillance in general, each level of government has various needs and priorities for surveillance data and concentrates on specific aspects of surveillance (*5*).

Public health surveillance is likely to become increasingly important to older adults in the United States. Although infectious diseases (e.g., pneumonia and influenza) continue to be a major cause of morbidity and mortality among older adults, the prevalence of chronic disease increases with age, and chronic conditions are

associated with disability and mortality, either alone or in combination with age-related physiologic changes (*6*). Although an important goal is that each generation have better health among its older adults than preceding generations, age-related increases in the prevalence of chronic diseases and injuries or their sequelae are not expected to disappear (*7,8*). Older adults will continue to experience more chronic conditions than younger persons, experience more activity limitations and disability related to chronic disease, use more health-care resources because of chronic diseases, and have multiple chronic conditions (comorbidities) among the oldest of the elderly (*6*). Because of growth in the number and proportion of persons in the United States who will be aged ≥65 years in the coming decades and because of substantial increases in life expectancy, the number of older adults with chronic diseases will remain high. However, public health interventions can decrease their risk of chronic diseases and injuries. Research indicates that changes in lifestyle (e.g., increasing physical activity and eating a balanced diet rich in fruits and vegetables) and using preventive services (e.g., cancer screening and vaccination against disease) help prolong the health and preserve the quality of life of older adults (*7*).

The surveillance summaries in this publication explore several major issues related to the health and abilities of older adults and demonstrate the potential of surveillance using available databases. This publication focuses on selected public health issues, although all issues related to public health surveillance apply to older adults.

This report includes an overview regarding surveillance using existing public health databases. This overview describes some problems and potential solutions that are important for disease surveillance among older adults. A more detailed discussion is beyond the scope of this publication and has been addressed elsewhere (*9*). In the second report, topics regarding older adults that are explored include a) leading causes of both hospitalization and death, b) prevalence estimates for leading chronic diseases, and c) economic burden of morbidity. The third report describes injury and violence among older adults. In the fourth report, the prevalence of several types of barriers that can block access to health care, including financial and structural (i.e., physical) barriers, are highlighted. The fifth report presents prevalence estimates for five health risks: a) overweight, b) drinking and driving, c) inadequate fruit and vegetable consumption, d) physical inactivity, and e) smoking. Three dimensions of health status are examined in the sixth report: a) sensory impairment, b) activity limitation, and c) health-related quality of life.

Representativeness and Sample Size

Much of the research on older adults in the United States comes from the secondary analysis of data that have been developed for other purposes (*3*). In the surveillance summaries in this publication, surveys sampled from the general population (e.g., the National Health Interview Survey [NHIS] and the Behavioral Risk Factor Surveillance System [BRFSS]) and data from administrative records (e.g., death records, hospital discharge records, or insurance claims records) were used extensively. When these kinds of data are used, two methodological questions must be addressed: "Is the dataset representative of all older persons in the United States?" and "Are sample sizes large enough for meaningful analyses?"

Representativeness

Defining the appropriate population and a sampling frame that accurately represents the study population is a critical element of public health surveillance (*10*). The sampling frames of household surveys (e.g., NHIS and BRFSS) consist of noninstitutionalized persons and exclude institutionalized persons. Approximately 5% of persons aged ≥65 years are nursing home residents and therefore are not included in the sampling frames of household surveys; among persons aged ≥85 years, more than 20% are nursing home residents. Functional impairment and comorbidity are major risk factors for institutionalization and are directly related to advanced age. Therefore, estimates of the occurrence of chronic conditions and activity limitations in the noninstitutionalized population of older adults might underestimate the occurrence in the entire elderly population. Several of the analyses in this publication are limited to the adult noninstitutionalized population.

Older adults who are substantially impaired, regardless of residence, are more likely to make errors in survey responses, less likely to respond to specific items, and might be generally less likely to participate in surveys, compared to nonimpaired older adults (*11,12*). Several reasons have been offered, including low levels of comprehension and concentration; fear of interacting with strangers; sensory or cognitive impairment; other health problems that might make some older adults reluctant to participate; or gatekeeping activities by household members, which might limit interviewers' access to older adults (*13,14,15*). Regardless of the reasons, nonresponse and incomplete response are problems in research focused on health status (*16*). Failure to retain the oldest old, the physically impaired, and the cognitively impaired in surveillance samples reduces the accuracy of population estimates and reduces the ability to study these important target groups. Techniques such as mixed modes of data collection and reliance on proxy reporters (as was done in the National Health Interview Survey and Longitudinal Survey on Aging) have been suggested as techniques to maximize sample coverage (*16*).

A related issue is the geographic representativeness of data. Most available datasets are designed to be nationally or regionally representative but are not locally representative. Adequate state-specific or local data on the health status and service needs of older persons are often not available. Health planners use national findings as proxies for the needs of older persons within local areas. Of the datasets used in these surveillance summaries, only the BRFSS was designed to provide state-specific population estimates. The analyses demonstrate the usefulness of BRFSS for aging surveillance and programmatic decision-making at the state level.

Sample Size

All the analyses reported in these surveillance summaries examined both findings for all older persons and findings for important subgroups of elders. A limitation of datasets designed to be representative of the general population is that subgroups of elders of particular interest might be sampled with few persons (i.e., have small numbers) (*13*). When numbers are small, estimates can be made for subgroups of particular interest, but the standard errors for those estimates are so large that they are unreliable, difficult to interpret, and of limited use for understanding the characteristics of the subgroup in the underlying population. For example, even in a large random sample of the U.S. population in which no special provisions were made to

oversample the elderly, approximately 13% of the respondents will be aged ≥65 years and only 5% will be aged ≥75 years (*14*). Although the actual numbers will depend on these proportions, the size of the total sample, and the sampling scheme, small numbers of persons are likely to fall into specific subgroups of older persons (e.g., persons aged ≥75 years, by race; male smokers aged ≥65 years; or all persons aged ≥85 years). When the sample is limited to a geographic area or when an event of interest is rare (e.g., drinking and driving among persons aged ≥85 years), the problem is magnified.

Several techniques for managing these difficulties were used in this publication. Multiple years of data were combined in some studies to yield larger sample sizes. In studies using BRFSS, data from multiple states were combined to provide "large enough" samples of particular subgroups (e.g., racial groups other than black and white, and persons of Hispanic origin). In other analyses, examination of racial subgroups was limited to black and white, so that there would be adequate sample size. Finally, in each of these analyses, findings for any subgroup that generated estimates with a relative standard error of ≥30% were not reported.

As the need for more and better information about the aging population grows, an increase in special studies (e.g., the Medicare Current Beneficiary Survey) in which the sampling frames are composed of a substantially high proportion of older persons is likely. Alternatively, more studies might include oversamples of older respondents. Although a complete discussion of oversampling is beyond the scope of this paper, oversampling is not without problems, including increased costs and the need for special analytic techniques.

Aging Issues in Public Health

Although public health programs have always served older adults, the elderly have not been identified traditionally as a primary target for public health (*22*). Nonetheless, many public health professionals have had substantial roles in gerontologic and geriatric research and practice during the preceding 40 years. The emerging emphasis on aging issues in public health is the result of the convergence of several forces including

- a longevity revolution in which more persons are living longer and the proportion of older adults in the population is increasing rapidly;
- the maturation of the unprecedented baby boom generation (i.e., persons born during 1945–1965);
- recent research indicating that disease and disability are not inevitable consequences of aging and that use of preventive services, elimination of risk factors, and adoption of healthy lifestyle behaviors are major determinants of how well persons age; and
- growth in federal programs that address leading causes of disease and disability among older adults, including Alzheimer's disease, arthritis, cancer, cardiovascular disease, and diabetes.

Since 1965 and the passage of the Older Americans Act (OAA), OAA-funded state and local agencies (the Aging Network) have provided a variety of services for older adults. In 1992, OAA began funding organizations that promote healthy aging and

disease prevention activities related to health screening, physical activity, chronic disabling conditions, and nutritional screening (*22*). Public health agencies are joining an existing network of organizations that are committed to promoting healthy aging. Both public health agencies and the Aging Network have a growing need for information on the health status of older adults, including measures of activity limitations, sensory impairments, quality of life, and the availability and use of preventive health services. Both groups have data that might be valuable to each other but have not been generally shared or coordinated (*23*).

Surveillance is an important contribution of public health. Current surveillance activities can be modified to ensure adequate coverage for special target groups (e.g., the very old, ethnic minorities, groups for whom particular preventive services might be especially important [e.g., women aged ≥65 years who have not had a recent mammogram], and impaired older adults who live in the community). These surveillance activities should provide guidance and feedback for programs at the Federal, state, and local levels. Health surveillance should be expanded so that all available data can be used in an integrated, coordinated manner to more effectively guide disease prevention and health promotion for older adults in the United States.

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Surveillance for Morbidity and Mortality Among Older Adults — United States, 1995–1996

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Abstract

Problem/Condition: During the twenty first century, growth in the number of older adults (persons aged ≥65 years) in the United States will produce an unprecedented increase in the number of persons at risk for costly age-associated chronic diseases and other health conditions and injuries.

Reporting Period: 1995–1996.

Description of Systems: This report uses data from CDC's National Center for Health Statistics (NCHS) to report on leading causes of death in 1996 (from the National Vital Statistics System), major causes of hospitalization (1996 National Hospital Discharge Survey [NHDS]), and major chronic conditions (1995 National Health Interview Survey [NHIS]). The National Vital Statistics System compiles information regarding all death certificates filed in the United States. NHDS is an annual probability sample of discharges from nonfederal, short-stay hospitals. NHIS is an ongoing annual cross-sectional household survey of the U.S. civilian, noninstitutionalized population. In addition, health-care expenditures for older adults are examined by using information obtained from published reports from the U.S. Health Care Financing Administration (HCFA) and health-services literature.

Results: The leading causes of death among adults aged ≥65 years were heart disease (1,808 deaths/100,000 population), malignant neoplasms (1,131/100,000), and cerebrovascular disease (415/100,000). Several leading causes of mortality among older adults differed by race, with deaths caused by Alzheimer's disease more frequent among whites and deaths caused by diabetes, kidney diseases, septicemia, and hypertension more frequent among blacks. Rates of hospitalization and length of hospital stays increased with age. Hospitalizations for heart disease represented the highest proportion of all discharges among older adults (23%). Discharge rates for malignant neoplasms, stroke, and pneumonia were similar for adults aged ≥65 years and, as with heart disease, were higher for men than for women. However, the rate of hospitalization for fractures among women exceeded the rate among men. Arthritis was the most prevalent chronic condition among adults aged ≥65 years (48.9/100 adults), followed by hypertension (40.3/100) and heart disease (28.6/100). In 1995, adults aged ≥65 years comprised 13% of the population but accounted for 35% of total

personal health-care dollars spent ($310 billion), and real per capita personal health-care expenditure for this age group increased at an average annual rate of 5.8% during 1985–1995. Projections for future medical expenditures for older adults vary; however, all project substantial increases after the year 2000. Hip fracture, dementia, and urinary incontinence are discussed as examples of prevalent and costly health conditions among older adults that differ in potential for prevention. These conditions were selected because they result in substantial medical and social costs and they differ in potential for prevention.

Interpretation: The higher prevalence of serious and costly health conditions among adults aged ≥65 years highlights the importance of implementing preventive health measures in this population.

Public Health Actions: Data regarding causes of morbidity, mortality, and health-care expenditures among older adults provide information for measuring the effectiveness of public health efforts to reduce modifiable risk factors for morbidity and mortality in this population.

INTRODUCTION

The U.S. population of adults aged ≥65 years is growing rapidly in number and proportion to the overall population (*1*). During 1995–2030, this population is expected to double from approximately 33.5 million in 1995 to 69.4 million in 2030. This increase will be the result of the aging of persons born during 1945–1965 (i.e., baby boomers) and increased life expectancy. During 1995, the proportion of adults aged ≥65 years was 12.8% compared with an anticipated 20% during 2030. Adults aged ≥85 years are the fastest-growing segment of the population; during 1995–2030, their numbers are projected to increase from 3.6 million to 8.5 million. Because health-care use and expenditures for older adults are disproportionate to their numbers among the population, the aging of the population has important implications for the health-care system.

Mortality statistics are used to describe the overall health status of a population; therefore, the leading causes of death among older adults (adults aged ≥65 years) are presented first in this report. Elderly persons are disproportionately hospitalized for several chronic conditions and account for substantial health-care expenditures. Therefore, this report presents the major causes of hospitalization for older adults as well as prevalence estimates for major chronic conditions. Statistics for the age group 55–64 years is also included for comparative purposes for the leading causes of death, major causes of hospitalization, and major chronic conditions among older adults. Other significant impairments among older adults (e.g., hearing and visual impairments) are addressed in the last report in this publication. In addition, the economic burden of morbidity among older adults is summarized. In addressing the last topic, this report presents information regarding current health expenditures and projected trends in spending for geriatric care. The health-care costs of three age-associated health problems — hip fracture, dementia, and urinary incontinence — are presented to illustrate the economic burden of late-life morbidity. These conditions were selected because they result in substantial medical and social costs and they differ in potential for prevention.

METHODS

Leading Causes of Death

The 1996 mortality data presented in this report were collected from all 50 states and the District of Columbia. Of deaths occurring in the United States, >99% are registered; all death certificates filed in the United States are provided to the National Center for Health Statistics (NCHS) through the National Vital Statistics System (*2*).

Causes of death were classified according to the *International Classification of Diseases, 9th Revision* (*ICD-9*) (*3*). Many elderly adults suffer from two or more comorbidities before death, often making the exact cause of death difficult to determine. The cause-of-death data reported here reflect the underlying cause of death, which is defined as ". . . the disease or injury that initiated the sequence of events leading directly to death or as the circumstances of the accident or violence that produced the fatal injury" (*2*). For cases that have more than one cause entered in the cause-of-death section of the death certificate, the underlying cause is determined by the sequence of conditions on the certificate and established rules and algorithms (*3*). Death rates per 100,000 population for the leading causes of death are presented by age, sex, and race.* Midyear U.S. population estimates for 1996 were used in the calculation of death rates.

Major Causes of Hospitalization

The 1996 hospital discharge data were collected from the National Hospital Discharge Survey (NHDS), which is conducted annually by NCHS (*4*). NHDS collects data from a sample of inpatient records acquired from a national probability sample of nonfederal, short-stay hospitals. Data from NHDS represent a sample of hospital discharges, not a sample of persons (i.e., one person with multiple discharges during the year might be counted more than once).

In 1996, data were collected for approximately 282,000 patient discharges from 480 participating hospitals. Hospital records were abstracted, and diagnoses were coded according to the *International Classification of Diseases, 9th Revision, Clinical Modification* (*ICD-9-CM*) (*5*). The first-listed diagnosis is defined as the principal diagnosis or, if one is not specified, the first diagnosis listed on the face sheet or discharge summary of the medical record (*4*). Hospital discharge rates are presented in this report by age and sex; data are not presented by race because, during 1996, information regarding race was missing for 23% of sampled records. The survey data were weighted to produce national estimates of hospital discharge.

Major Chronic Conditions

Prevalence estimates for selected chronic conditions were collected from the 1995 National Health Interview Survey (NHIS) (*6*). Conducted by NCHS, NHIS is an ongoing annual cross-sectional household survey that is administered annually to a nationally representative, multistage probability sample of the U.S. civilian, noninstitutionalized

*Race/ethnicity data are presented only for non-Hispanic whites and non-Hispanic blacks because sample sizes for other racial/ethnic groups were too small for meaningful analysis.

population. NHIS data are obtained through personal interview with household members. Whenever possible, all available adult family members participate in the interview; proxy interviews are allowed for older adults who are unable to participate because of illness or impairment. The 1995 NHIS consisted of two parts — a set of basic health and demographic inquiries and questions regarding current health topics.

Six checklists of chronic conditions are included in NHIS. The six lists cover

- selected skin and musculoskeletal conditions (e.g., arthritis, acne, or skin cancer);
- impairments (e.g., deafness, mental retardation, or color blindness);
- selected digestive conditions (e.g., gallstones, ulcers, or cancers of the intestines);
- selected conditions of the genitourinary, nervous, endocrine, metabolic, and blood and blood-forming systems (e.g., diabetes, epilepsy, or breast cancer);
- selected circulatory conditions (e.g., angina pectoris, hypertension, or stroke); and
- selected respiratory conditions (e.g., asthma, emphysema, or lung cancer).

Determining the prevalence of conditions excluded from the checklists (e.g., depression) is not possible.

The time frame or reference period of interest was not the same for all six lists. For conditions in the first, third, fourth, and sixth lists, respondents were asked, "During the past 12 months, did anyone in the family have . . .?" For conditions in the second list, respondents were asked, "Does anyone in the family now have . . .?" For the fifth list, lifetime prevalence was assessed by asking respondents, "Has anyone in the family ever had . . .?"

Only one of the lists, which is chosen on a predetermined basis, is administered per interview; therefore, each list of chronic conditions is administered to only one sixth of sampled households. For this report, prevalence estimates were stratified by age (i.e., 55–64, 65–74, and ≥75 years), race/ethnicity (non-Hispanic white and non-Hispanic black), and sex. Data were not reported when the standard error equaled ≥30% of the prevalence estimate. SAS software (i.e., an integrated system for data access, management, analysis, and presentation) was used to calculate prevalence estimates, and SUDAAN was used to calculate 95% confidence intervals.

Economic Burden of Morbidity

The information regarding health-care expenditures for older adults presented in this report synthesizes published data from the Health Care Financing Administration (HCFA) and other studies from the health services literature. The studies cited in this section should be referred to for details regarding the costing methodologies and associated assumptions employed in each study.

RESULTS

Leading Causes of Death

During 1996, approximately 2.3 million deaths were reported in the United States, the majority (74%) of which were among adults aged ≥65 years. For each of 12 leading causes of death, mortality rates increased with age (Table 1). The leading cause of death for adults aged ≥65 years was heart disease (1,808 deaths/100,000 population). With a rate of 6,314/100,000 population, deaths from heart disease accounted for 41% of all deaths among adults aged ≥85 years. Deaths caused by malignant neoplasms ranked as the second leading cause of death among older adults, but first among those aged 65–74 years. Across age groups, the cancer death rate was higher among blacks than whites and considerably higher among men.

Cerebrovascular diseases represent the third leading cause of death for older adults. The proportion of deaths caused by cerebrovascular diseases increased with age, doubling from 5.3% among adults aged 65–74 years to 10.5% among those aged ≥85 years. The death rate for malignant neoplasms was approximately sixfold higher than that for cerebrovascular diseases among adults aged 65–74 years. Among adults aged ≥85 years, the two death rates were similar; however, for white women aged ≥85 years, deaths caused by cerebrovascular diseases outnumbered deaths caused by malignant neoplasms.

The importance of pneumonia and influenza as a cause of death increased with age. Pneumonia and influenza ranked as the sixth leading cause of death among older adults aged 65–74 years, fifth among those aged 75–84 years, and fourth among those aged ≥85 years. This pattern was observed across sex and race categories.

Differences exist between whites and blacks for several leading causes of death. Notably, the Alzheimer's disease death rate was higher among whites (66/100,000) than among blacks (38/100,000). The highest rate was observed among white women aged ≥85 years (313/100,000 population), among whom Alzheimer's disease ranked as the sixth leading cause of death. In contrast, the death rates for diabetes, kidney diseases, septicemia, and hypertension were approximately 2–2.5 times higher among blacks than among whites; this pattern generally held true across age and sex categories.

Major Causes of Hospitalization

Rates of hospitalization and length of hospital stays increase with age. During 1996, adults aged ≥65 years comprised approximately 13% of the U.S. population but accounted for an estimated 38% of all discharges from and 48% of all days of care in nonfederal, short-stay hospitals. During 1996, an estimated 11.7 million hospitalizations occurred among adults aged ≥65 years.

Hospitalizations for heart disease accounted for approximately one fourth (23.2%) of all discharges among older adults (Table 2). The rate of discharge for heart disease increased with age. Among adults aged 65–74 years, the discharge rate was 62.4/1,000 population; the rate was approximately twofold higher (117.9/1,000 population) among those aged ≥85 years. Within each age category, the rate of hospitalization for heart disease was higher among men.

TABLE 1. Rates for selected leading causes of death among older adults, by sex, race, and age group ≥65 years — United States, 1996*

Cause of death†	Adults aged ≥65 yrs								
		Sex		Race		Age group (yrs)			
	Total	Male	Female	White	Black	55–64§	65–74	75–84	≥85
Heart disease (612,199)	**1,808**	1,983	1,686	1,820	1,937	315	776	2,010	6,314
Malignant neoplasms (382,988)	**1,131**	1,442	915	1,125	1,338	406	862	1,352	1,798
Cerebrovascular diseases (140,488)	**415**	374	443	412	479	45	136	477	1,612
COPD¶ and allied conditions (91,470)	**270**	338	223	283	173	47	162	358	541
Pneumonia and influenza (74,797)	**221**	236	211	225	207	17	57	231	1,011
Diabetes mellitus (46,376)	**137**	139	136	127	255	39	89	166	288
Accidents and adverse effects (30,830)	**91**	109	78	92	90	32	47	102	276
Alzheimer's disease (21,077)	**62**	49	71	66	38	1	11	73	285
Kidney diseases** (20,869)	**62**	70	56	58	109	8	25	73	210
Septicemia (17,337)	**51**	50	52	48	96	8	22	59	173
Atherosclerosis (15,891)	**47**	41	51	49	37	3	10	43	242
Hypertension (11,061)	**33**	29	35	29	73	5	13	37	117

*Rate per 100,000 population; number of deaths for adults aged ≥65 years are in parentheses.
†Based on the following: World Health Organization. *Manual of the international statistical classification of diseases, injuries, and causes of death.* 9th rev. Geneva, Switzerland: World Health Organization, 1977.
§Provided for comparison purposes.
¶COPD: chronic obstructive pulmonary diseases.
**Kidney diseases include nephritis, nephrotic syndrome, and nephrosis.

Sources: CDC/National Center for Health Statistics, 1996 Mortality File (unpublished data) and Peters KD, Kochanek KD, Murphy SL. Deaths: final data for 1996. Hyattsville, MD: US Department of Health and Human Services, CDC, 1998; DHHS publication no. (PHS) 99-1120 (National Vital Statistics Reports; vol. 47, no. 9).

TABLE 2. Rates of discharge for selected major causes of hospitalization among older adults, by sex and age group ≥65 years — United States, 1996*

	Adults aged ≥65 yrs						
		Sex		Age group (yrs)			
Condition†	Total	Male	Female	55–64§	65–74	75–84	≥85
Heart disease (2,721)	80.4	89.8	73.8	35.3	62.4	97.4	117.9
Malignant neoplasms (737)	21.8	25.3	19.3	12.9	21.4	22.7	20.6
Cerebrovascular diseases (727)	21.5	22.5	20.7	5.5	13.5	28.5	39.6
Pneumonia (702)	20.7	23.1	19.1	4.7	11.8	24.6	53.8
Fractures (523)	15.4	7.8	20.7	3.3	7.0	18.4	48.7
Bronchitis (318)	9.4	9.8	9.2	4.2	7.8	10.9	12.9
Osteoarthritis (293)	8.6	7.1	9.7	3.0	8.3	10.6	4.6
Diabetes mellitus (198)	5.8	5.5	6.1	4.1	5.4	6.3	6.8
Diseases of the nervous system and sense organs (187)	5.5	5.6	5.5	2.1	4.1	6.9	8.5
Hyperplasia of prostate (85)	6.1	6.1	N/A¶	1.7	5.0	7.2	9.9

*Rate per 100,000 population; total number of hospital discharges (in thousands) for adults aged ≥65 years are in parentheses.

†Based on the following: Public Health Service and Health Care Financing Administration. *International classification of diseases, 9th rev, clinical modification.* 4th ed. Washington, DC: Public Health Service, 1991. DHHS publication no. (PHS) 91-1260. The *ICD-9* codes for each major cause of hospitalization listed are heart disease (391–392.0, 393–398, 402, 404, 410–416, 420–429); malignant neoplasms (140–208, 230–234); cerebrovascular diseases (430–438); pneumonia (480–486); fractures (800–829); bronchitis (466, 490–491); osteoarthritis (715); hyperplasia of prostate (600); diabetes mellitus (250); and diseases of the nervous system and sense organs (320–389).

§Provided for comparison purposes.

¶Not applicable.

Source: CDC/National Center for Health Statistics, 1996 National Hospital Discharge Survey (unpublished data).

The overall rates of discharge for malignant neoplasms, stroke, and pneumonia were similar for adults aged ≥65 years. For all three conditions, the rates were higher among men. The rate of discharge for malignant neoplasms was similar across older age groups. In contrast, the rates for stroke and pneumonia increased substantially with age; this increase was true of discharge rates for pneumonia among elderly men in particular, where the rate rose from 13.0/1,000 population among men aged 65–74 years to 73.3/1,000 population among men aged ≥85 years. Among adults aged ≥85 years, pneumonia was the second major cause of hospitalization, preceded by heart disease.

The rate of hospitalization for fractures was higher among women; this rate was true across all age groups. Hip fractures accounted for the majority (60.5%) of hospitalizations for fractures. Among adults aged ≥85 years, hip fractures were responsible for two thirds of all fracture-related discharges. Among women aged ≥85 years, fractures were the second major cause of hospitalization.

Men and women had similar rates of discharge for bronchitis, osteoarthritis, diabetes, and diseases of the central nervous system and sense organs. Sex- and age-specific analyses revealed that discharge rates for bronchitis and diabetes increased with age among men but not among women. Among adults aged ≥85 years, the rate of discharge for bronchitis was twofold higher among men (21.4/1,000 population) than among women (9.6/1,000 population). Among elderly men, hospitalization for hyperplasia of the prostate increased with age, doubling from 5.0/1,000 population among men aged 65–74 years to 9.9/1,000 population among those aged ≥85 years.

Major Chronic Conditions

During 1995, of those conditions covered by NHIS, arthritis was the leading chronic condition among older adults (Table 3); the prevalence of arthritis increased with age. Hypertension also was highly prevalent among older adults, with a rate of 40.3/100 adults aged ≥65 years. A minor difference in prevalence of hypertension was observed between adults aged 65–74 years and adults aged ≥75 years. The prevalence of both arthritis and hypertension was higher among women and higher among blacks than whites.

The prevalence of heart disease increased with age, doubling from 16.7/100 adults aged 55–64 years to 33.9/100 adults aged ≥75 years. Among adults aged ≥65 years, the prevalence of heart disease was approximately 40% higher among men (34.2/100 persons) than among women (24.6/100 persons). This prevalence estimate reflects the number of conditions per 100 persons, not the number of persons with these conditions; therefore, given that some overlap exists among heart disease conditions, the estimate is approximately 12% higher than the number of persons with the conditions.

During the 12 months before the interview, the combined prevalence of chronic bronchitis, asthma, and emphysema was 13.8/100 among adults aged ≥65 years. The prevalence of these respiratory diseases was constant across age, sex, and race groups. As with heart disease, this prevalence estimate reflects the number of conditions per 100 persons, not the number of persons with these conditions; therefore, given that some overlap exists among respiratory conditions, the estimate is approximately 12% higher than the number of persons with the conditions. A similar, overall prevalence rate (12.6/100 persons) was found for diabetes. The prevalence of diabetes was similar among men and women; however, substantial difference existed between black and white older adults, with blacks having a twofold higher prevalence rate than whites (21.9 versus 11.9/100 persons).

NHIS did not assess the prevalence of all cancers. Rather, through four of the six lists of chronic conditions, NHIS asked questions regarding the following major cancers: skin, intestine, female breast, female genital organs, prostate, lung/bronchus, and other respiratory sites. During the 12 months before the interview, the combined prevalence of these cancers among those adults aged ≥65 years was 7.4/100 persons (3.9/100 persons, excluding skin cancer). Lifetime prevalence of cancer was not assessed by NHIS. The lifetime prevalence of cerebrovascular diseases quadrupled from 2.5/100 adults aged 55–64 years to 9.9/100 adults aged ≥75 years. The lifetime prevalence of atherosclerosis also increased with age.

TABLE 3. Prevalence of selected major chronic conditions among older adults, by sex, race and age group ≥65 years — United States, 1995*

Condition	Adults aged ≥65 yrs							
		Sex		Race		Age group (yrs)		
	Total	Male	Female	White	Black	55–64†	65–74	≥75
Arthritis (15,402)	**48.9**	40.5	55.0	48.7	57.3	32.8	44.8	54.8
Hypertension (12,692)	**40.3**	34.9	44.2	39.5	53.3	28.9	39.2	42.0
Heart disease (9,682)	**30.8**	36.2	26.9	31.5	26.1	18.0	26.8	36.4
Selected respiratory diseases§ (4,343)	**13.8**	14.4	13.4	13.7	14.7	13.7	14.8	12.4
Diabetes mellitus (3,978)	**12.6**	12.4	12.8	11.9	21.9	9.7	13.3	11.7
Selected malignant neoplasms¶ (2,324)	**7.4**	8.7	6.4	7.9	—**	5.0	6.0	9.3
Cerebrovascular diseases (2,243)	**7.1**	7.9	6.5	7.1	—**	2.5	5.2	9.9
Atherosclerosis (1,294)	**4.1**	4.5	3.9	4.5	—**	1.8	2.9	5.9

*Number of conditions per 100 persons; total number of conditions (in thousands) for adults aged ≥65 years are in parentheses.
†Provided for comparison purposes.
§Selected respiratory diseases include chronic bronchitis, asthma, and emphysema.
¶Selected malignant neoplasms include cancers of the skin, intestine, female breast, female genital organs, prostate, lung/bronchus, and other respiratory sites.
**Estimate is statistically unreliable.

Source: CDC/National Center for Health Statistics, 1995 National Health Interview Survey (unpublished data).

Current Level and Distribution of Health-Care Expenditures for Older Adults

Per capita health-care expenditure in the United States is the highest in the world. In this report, *health-care expenditure* refers to personal health-care expenditure or spending, including hospital care, physicians' services, nursing home care, and other personal health care. During 1996, the U.S. per capita personal health-care expenditure was $3,708, approximately one third higher than in the second highest ranking country, Switzerland (*7*). During 1995, personal health-care expenditures accounted for 12.1% of the U.S. gross domestic product (GDP) (*8*). The amount of national medical care resources consumed by elderly adults is disproportionate to their numbers among the population. During 1995, approximately 33.5 million adults in the United States aged ≥65 years represented 12.8% of the total population, but they accounted for approximately one third (35.3%) of total personal health-care dollars ($310 billion).

Health-care expenditure increases with age (Table 4) (*9*). During 1987, per capita expenditures ranged from $3,728 among adults aged 65–69 years to $9,178 among adults aged ≥85 years. Overall, spending on hospital care consumed the largest proportion (41.9%) of total expenditure. In addition, approximately one fifth of total personal health-care expenditures went to physician services and another one fifth to nursing home care. For adults aged ≥85 years, nursing home expenditures represented the largest share of health-care expenditures.

Increases in functional impairment affecting the capacity for self-care result in higher use of long-term care (LTC) services among older adults. LTC includes all social, personal, and supportive services needed during a prolonged period for persons incapable of sustaining themselves without this care (*10*). During 1994, approximately $103 billion (or 13% of total personal health-care expenditures) was spent on LTC. Of the 12.6 million persons requiring LTC, 57.9% were aged ≥65 years (*11*). During 1994, approximately 89.2% of nursing home residents were among this age group (*12*). A person's risk for being institutionalized at age ≥65 years is approximately 40% (*13*).

During 1992, a small proportion of very ill persons accounted for a large proportion of total Medicare costs (Table 5) (*14*). Among the highest 1% of spenders, mean

TABLE 4. Per capita personal health-care expenditure,* by age group and spending category — United States, 1987

	Expenditure†				
Age group (yrs)	Total ($)	Hospital care (%)	Physician services (%)	Nursing home (%)	Other (%)
Overall	**5,360**	**41.9**	**20.7**	**20.2**	**17.2**
65–69	**3,728**	45.1	26.1	4.4	24.3
70–74	**4,424**	46.6	24.5	8.1	20.7
75–79	**5,455**	46.5	21.8	14.7	17.0
80–84	**6,717**	43.7	18.5	23.9	13.9
≥85	**9,178**	35.2	13.8	40.7	10.3

*Personal health-care expenditure is defined as spending for the direct consumption of goods and services.

†Percentages might not total 100% because of rounding.

Source: Adapted from Waldo DR, Sonnefeld ST, McKusick DR, Arnett RH III. Health expenditures by age group, 1977 and 1987. Health Care Financing Rev 1989;10(4):111–20.

TABLE 5. Distribution of Medicare spending, by age group ≥65 years and spending level — United States, 1992

Spending level	Age group (yrs) 65–69 Mean spending ($)	65–69 %*	70–74 Mean spending ($)	70–74 %*	75–79 Mean spending ($)	75–79 %*	80–84 Mean spending ($)	80–84 %*	≥85 Mean spending ($)	≥85 %*
Top 1%	58,740	27	52,464	21	60,996	20	53,317	15	61,866	15
95%–99%	19,840	62	22,054	54	24,301	49	24,539	42	27,155	40
90%–94%	7,441	78	9,913	72	12,944	69	14,116	62	15,379	57
70%–89%	1,917	95	2,882	94	3,894	93	5,227	91	7,091	90
50%–70%	399	99	601	99	810	98	1,146	98	1,608	98
0%–50%	44	100	74	100	114	100	161	100	204	100

*Cumulative percentage.

Source: Cutler D, Sheiner L. Demographics and medical care spending: standard and non-standard effects. Cambridge, MA: National Bureau of Economic Research, 1998; Working paper no. 6866.

spending ranged from $52,464 to $61,866; in contrast, mean spending ranged from $44 to $204 for the lowest 50% of Medicare beneficiaries. Across age groups, the highest 6% of those persons purchasing health care among Medicare enrollees accounted for approximately 40% of Medicare spending, whereas the lowest 50% required <2% of expenditures. Cumulative distribution of Medicare expenditures within an age group were less skewed with increasing age.

Approximately 40% of personal health care for older adults is paid for by private sources (Table 6). The majority of health care for older adults is publicly funded through Medicare and Medicaid programs. The proportion from Medicare tends to decrease with age, whereas the proportion from Medicaid increases with age.

Changes in Health-Care Expenditures for Older Adults

Health-care expenditures for older adults have increased at a faster rate than spending for the total population. During recent decades, the rate of increase in personal health-care expenditure for older adults living in the United States outpaced the rate of increase in GDP by 3.5%–4% per annum (*15*). As a share of GDP, personal health-care expenditure for older adults increased from 3.0% during 1985 to 4.3% during 1995. Real per capita personal health-care expenditure for adults aged ≥65 years rose at an average annual rate of 5.8%, increasing from $6,088 during 1985 to $9,231 during 1995 (1995 U.S.$). Although a portion of the rise in spending can be attributed to the aging of the population, the majority of the increase is attributable to higher medical care consumption by older adults (*15*). Advances in medical technology have resulted in substantial increases in at least seven common, costly procedures (Table 7). For several procedures (e.g., angioplasty), the rate of increase was higher at older ages.

Projection of Future Health-Care Expenditure for Older Adults

Estimates of future spending vary from study to study because each projection is based on a different set of assumptions and scenarios. One researcher has projected that personal health-care expenditure for older adults will double during 1994–2030

TABLE 6. Distribution of per capita personal health-care expenditure, by age group and source of funding — United States, 1987

Age group (yrs)	Private source* (%)	Public source†			
		Total (%)	Medicare (%)	Medicaid (%)	Other (%)
Overall	**37.4**	**62.6**	**44.6**	**12.0**	**6.0**
65–69	38.4	61.6	49.6	6.6	5.5
70–74	35.4	64.6	50.5	8.1	6.1
75–79	33.8	66.2	49.2	10.4	6.6
80–84	34.7	65.3	45.0	13.5	6.7
≥85	39.6	60.4	35.0	19.0	6.4

*Principal private sources include private health insurance, out-of-pocket payment, and other private sources.

†Percentages might not total 100% because of rounding.

Source: Adapted from Waldo DR, Sonnefeld ST, McKusick DR, Arnett RH III. Health expenditures by age group, 1977 and 1987. Health Care Financing Rev 1989;10(4):111–20.

(12) (Table 8), assuming a constant level of real age-specific spending. In contrast, another study (*15*) assumes an annual spending increase of 5.8% (the average annual rate increase observed during 1985–1995) and projects that total personal health-care expenditure for older adults will quadruple from $310 billion to $1.3 trillion by the year 2020. This projection also indicates that per capita expenditure for older adults will reach $24,391 and that personal health-care expenditure for older adults will account for 9.9% of GDP by 2020. Medicare is the major payer of health-care expenditures for adults aged ≥65 years (Table 6). HCFA estimates that total Medicare payments as a percentage of GDP will increase from 2.6% during 1997 to 5.9% during 2030 (*16*) (Table 9).

EXPENDITURES FOR SELECTED CONDITIONS AMONG OLDER ADULTS

Hip Fractures

In the United States, adults aged ≥65 years account for approximately 88% of all health-care expenditures for fractures resulting from loss of bone density (*17*). Hip-fracture is among the most frequently occurring, devastating, and costly type of

TABLE 7. Average annual percentage rate of change in age-specific use of seven medical procedures among adults aged ≥65 years, by sex and age group — United States, 1987–1995

	Age group (yrs)									
	65–69		70–74		75–79		80–84		≥85	
Procedure	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women
Angioplasty	13.1	12.6	15.7	14.9	19.7	17.1	21.3	18.4	22.3	20.0
Coronary artery bypass graft	3.7	4.4	5.5	7.3	8.5	10.7	11.1	13.3	14.6	11.0
Cardiac catheterization	4.4	5.3	6.2	7.1	10.0	9.9	13.4	16.9	16.0	15.7
Carotid endarterectomy	7.1	8.6	5.9	6.9	10.1	9.1	11.4	10.3	10.6	11.8
Hip replacement	14.9	18.3	16.3	17.0	17.7	18.7	20.1	21.4	25.8	28.9
Knee replacement	11.5	10.9	12.1	10.8	11.8	9.1	8.2	8.4	10.6	10.7
Laminectomy	3.9	4.9	5.0	6.6	8.0	6.5	10.1	4.1	8.4	7.2

Source: Fuchs VR. Health care for the elderly: How much? Who will pay for it? Cambridge, MA: National Bureau of Economic Research, 1998; Working Paper no. 6755.

TABLE 8. Projected personal health-care expenditure (in constant 1994 billions of U.S.$) for adults aged ≥65 years, by age group and year — United States, 1994–2030

Age group (yrs)	1994	2000	2010	2020	2030
Overall	**311**	**309**	**384**	**496**	**665**
65–74	136	135	152	224	276
≥75	175	175	231	271	389

Note: Because of rounding, numbers for age groups 65–74 and ≥75 years might not total the number for age group ≥65 years.

Source: Rice DP. Beneficiary profile: yesterday, today, and tomorrow. Health Care Financing Rev 1996;18(2):23–46.

TABLE 9. Projected Medicare (hospital insurance and supplemental medical insurance) disbursements* as a percentage of gross domestic product (GDP) — United States, 1997–2030

Year	Hospital insurance (% GDP)	Supplemental medical insurance (% GDP)	Total†
1997	1.69	0.93	2.62
2000	1.61	1.07	2.68
2010	1.78	1.67	3.46
2020	2.22	2.48	4.70
2030	2.79	3.06	5.85

*Disbursements are the sum of benefit payments and administrative expenses.
†Percentages might not total because of rounding.

Source: Health Care Financing Administration. 1998 Annual report of the board of trustees of the Federal Hospital Insurance Trust Fund. Available at <http://www.hcfa.gov/pubforms/tr/default.htm>. Accessed July 1999.

fracture for older adults. In this publication, the epidemiology of hip fracture among older adults is discussed in the report regarding injuries and violence among older adults.

Estimates of total health-care expenditure for hip fracture among adults aged ≥65 years are not available, although a recent study (*17*) indicated that, among adults aged ≥45 years, hip fractures accounted for 63% of all health-care costs for osteoporotic fractures. During the first 12 weeks after hip fracture, Medicare costs averaged $191/day, which is the highest for all fracture types examined (*18*). During the first year after hip fracture, total excess costs (i.e., postfracture health-care costs minus health-care costs during the 6 months before fracture) were >$15,000/person. If extrapolated to the total Medicare population aged ≥65 years, total excess costs were $2.9 billion during the first year after hip fracture. Projections for the cost of hip fracture indicate that, by the year 2040, approximately 512,000 hip fractures could occur annually, with an estimated cost of $16 billion (1984 U.S.$) (*19*).

Dementia

Senile dementia refers to several impairing diseases and disorders, a small proportion of which are potentially reversible. The most common form of dementia among older adults is Alzheimer's disease. The prevalence of dementia increases with age, from 2.8% among adults aged 65–74 years to 28% among those aged ≥85 years (*20*). Approximately half of elderly nursing home residents have severe dementia (*21*).

Persons with dementia often need costly acute and long-term care services. During 1991, the medical care costs of severe dementia were estimated to be $28.5 billion (*22*). Per capita Medicare expenditure during 1992 was $6,208 for patients with dementia of the Alzheimer type (DAT), which is approximately twofold higher than for all Medicare beneficiaries without DAT (23). Compared with elderly adults without this diagnosis, those with DAT had higher expenditures for hospital inpatient services (2.2 times), physician and ancillary provider services (1.6 times), and hospital outpatient

services (1.4 times). Researchers project that from $92 billion to $149 billion will be spent on an estimated 6.1 million–9.8 million persons with dementia during 2040 (20).

Urinary Incontinence

Urinary incontinence (UI) (i.e., the involuntary loss of urine to the extent that it constitutes a social or hygienic problem) is a disorder that typically occurs among older adults, particularly among women. UI is associated with physical and psychologic morbidity as well as a higher risk for nursing home placement. The prevalence of UI is from 15% to 30% among elderly adults living in the community and ≥50% among those residing in nursing homes (24).

During 1995, an estimated 6.3 million community-dwelling older adults and 1.2 million elderly nursing home residents were living with UI (25). The direct costs related to the diagnosis, treatment, and routine care (i.e., use of pads and briefs, laundry costs, and catheterization) of UI totaled $23.6 billion (*25*). An additional $2 billion in direct costs for UI went to other related care requirements (e.g., skin conditions) and longer periods of inpatient care. Indirect costs (i.e., for home care services associated with the management of UI) totaled $704 million. Therefore, during 1995, the total cost of UI among older adults was an estimated $26.3 billion, or $3,565/person (*25*).

DISCUSSION

Information is presented in this report regarding the leading causes of morbidity and mortality among older adults. In addition, the current and projected economic burden of morbidity among older adults are examined. Special attention is focused on hip fracture, dementia, and UI. Limitations of this report are the exclusion of information regarding chronic conditions among older adults in nursing homes and other institutional settings and data regarding other indicators of the burden of these conditions on the health-care system (e.g., use of long-term care services).

Cardiovascular disease is a major cause of death among older adults in the United States. Modifiable risk factors that account, in part, for this premature mortality during later life include smoking (*26,27*), excessive alcohol consumption (*28*), physical inactivity (*29,30*), obesity (*31,32*), dyslipidemia (*33,34*), and poor control of hypertension (*35,36*) and diabetes (*37*). These risk factors are interrelated and often act synergistically to produce several adverse health outcomes. Cardiovascular risk reduction has been reported to be cost-effective (*38*) and should be emphasized throughout the life course, from childhood (*39*) to old age (*40*). Smoking cessation interventions are also highly cost-effective (*38,41*).

Pneumonia and influenza are important causes of hospitalization and death among older adults. All adults aged ≥65 years should receive influenza vaccinations annually; pneumococcal vaccination should be administered once, but can be repeated for certain groups at high risk after 5 years (*42,43*). Influenza and pneumococcal vaccinations are cost-effective compared with other preventive measures and can be cost-saving (*44,45*); in addition, they have been reported to be effective in reducing serious complications and hospitalizations by approximately one half (*44,46*). Nevertheless, during 1997, 65% of older adults reported receiving influenza vaccination in the past 12 months, and only 45% reported ever receiving pneumococcal vaccination

(*47*). Every effort should be made to increase vaccination coverage among older adults, particularly among those who suffer from chronic illnesses.

As the data throughout this report demonstrate, fractures (particularly hip fractures) are a leading cause of hospitalization and health-care expenditure for older adults. The following strategies aid primary prevention of hip fracture:

- maximizing bone density during adolescence and early adulthood through adequate consumption of dietary calcium and regular, weight-bearing physical activity;
- avoiding behavior risks (e.g., smoking and excessive alcohol consumption); and
- reducing the risk for falls by older adults (e.g., through use of assistive devices such as canes and walkers and environmental modifications such as the elimination of household obstacles or the installation of bathroom grab bars).

Strategies for secondary prevention of hip fracture include bone-density screening of postmenopausal women at high risk, hormone replacement therapy, and medications to arrest bone loss (*18*).

Alzheimer's disease is a leading cause of death among older adults, particularly among women. Although researchers have begun to identify various genetic (*48,49*) and social (*50*) risk factors for Alzheimer's disease, data are not available to guide prevention strategies. Currently, curative treatment is not available for Alzheimer's disease; however, certain therapies have been successful in producing temporary improvement in dementia symptoms (*22*). Until new, effective treatments are developed, the costs of dementia care will continue to increase (*51*).

UI is a serious, nonfatal health problem among older adults, resulting in billions of dollars of health-care costs annually. Researchers estimate that approximately one third of all cases of UI can be resolved and another one third improved through proper management of the condition (*52*). Appropriate, timely therapy (e.g., bladder training, pelvic exercises, and behavioral modification) can slow or even improve the course of UI (*53–56*). However, despite the potential for effective intervention, UI is underreported by elderly adults and inadequately diagnosed and treated by health-care providers (*52,57*). Achieving reductions in the morbidity and costs associated with UI will require more education and awareness among patients and health-care providers.

Health-care expenditures are projected to increase during the next three decades as the U.S. population ages. Concern has been growing regarding the future affordability of geriatric care. Because of limited health-care resources, the incorporation of results of economic evaluations (e.g., cost-effectiveness analyses) into public health decision-making is increasingly important.

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Surveillance for Injuries and Violence Among Older Adults

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Abstract

Problem/Condition: Injuries and violence are major causes of disability and death among adults aged ≥65 years in the United States. Injuries impair older adults' quality of life and result in billions of dollars in health-care expenditures each year.

Reporting Period: This report reviews 1987–1996 data regarding fall-related deaths, 1988–1996 data on hospitalizations for hip fracture, 1990–1997 data regarding motor vehicle-related injuries, 1990–1996 data on suicides, and 1987–1996 data on homicides.

Description of Systems: Data on fall-related deaths, suicides, and homicides are from the National Center for Health Statistics annual mortality data tapes for 1987–1996. Homicide data are supplemented with information from the Federal Bureau of Investigation's Supplemental Homicide Reports for 1987–1996. Data on hospitalizations for hip fracture are from the 1988–1996 National Hospital Discharge Surveys. Information regarding motor vehicle-related injuries for 1990–1997 is from the National Highway Traffic Safety Administration's Fatality Analysis Reporting System and General Estimates System.

Results: Rates of fall-related deaths for older adults increased sharply with advancing age and were consistently higher among men in all age categories. Men were 22% more likely than women to sustain fatal falls. A trend of increasing rates of fall-related deaths was observed from 1987 through 1996 in the United States, although rates were consistently lower for women throughout this period. Rates of hospitalizations for hip fracture differed by age and were higher for white women than for other groups. Rates increased with advancing age for both sexes but were consistently

higher for women in all age categories. U.S. hospitalization rates for hip fracture increased for women from 1988 through 1996 while the rates for men remained stable. Rates of motor vehicle-related injuries increased slightly from 1990 through 1997, and marked variations in state-specific death rates were observed; in most states, older men had death rates approximately twice those for older women. Although suicide rates remain higher among older adults than among any other age group, rates of suicide among adults aged ≥65 years decreased 16% during the study period. Suicide rates among older adults varied by sex and age group. Homicide rates declined 36% among older adults. Homicide rates were highest for black men, followed by black women and white men; the homicide risk for blacks relative to whites decreased from 4.8 to 3.9 per 100,000 persons, indicating that the gap between rates for blacks and whites is closing. Half of the older homicide victims were killed by someone they knew.

Interpretation: The increase in rates of fall-related deaths and hip fracture hospitalizations from 1988 through 1996 might reflect a change in the proportion of adults aged ≥85 years compared with those aged 65–84 years — a change that results, in part, from reduced mortality from cardiovascular and other chronic diseases. Fall-related death rates might be higher among older men because they often have a higher prevalence of comorbid conditions than women of similar age. Racial differences in hospitalization rates might have some underlying biologic basis; the prevalence of osteoporosis, a condition that contributes to reduced bone mass and increased bone fragility, is greatest among older white women. Compared with whites aged ≥65 years, blacks of comparable ages have greater bone mass and are less likely to sustain fall-related hip fractures. Additional studies are needed to determine why rates of motor vehicle-related injury have increased slightly among older adults and why these rates vary by state. Declining rates of suicide among older adults might be related to changes in the effect or type of risk factors traditionally observed in this age group. Research is needed to identify reasons for variations in suicide rates among older persons. Homicides among older adults declined. Possible explanations for this decrease include a reduction in victimization rates; advances in medical care for potentially fatal injuries; and benefits from increased public awareness of the problem. The black-white gap in homicide rates is closing because rates are decreasing among blacks.

Public Health Actions: Because older adults are the fastest growing age group in the U.S. population, the burden of injuries and violence will increase unless persons who have frequent contact with older adults are aware of the extent of the problem and prevention strategies are improved for this population. Interventions must be multifaceted, and older adults who are able to take an active role in reducing their risks should do so. To prevent fall-related injuries and hip fractures, interventions should promote behavioral and environmental changes as well as the development of safety products (e.g., protective hip pads and impact-absorbing floor materials). Interventions to prevent motor vehicle-related injuries should focus on improving the design of motor vehicles; changing the traffic and pedestrian environment to improve safety; and changing the behavior of older drivers, passengers, and pedestrians. In the area of suicide prevention, interventions are needed to educate health-care providers and caregivers about the extent of the problem and risk factors for suicide among older adults. Effective interventions to prevent homicide and violence against older adults

must integrate a variety of disciplines (e.g., criminal justice, social services, education, community advocacy, and public health). The association between homicide, assault, and elder abuse is not well understood, but the limited information that is available supports the need to target family members and other persons known to older victims, because they are most often the assailants.

INTRODUCTION

Injuries and violence are major causes of disability and death among older adults (i.e., persons aged ≥65 years). Although older adults die in greater numbers as a result of chronic conditions (e.g., cardiovascular diseases and cancer), injuries and violence remain important public health issues for this age group. For example, unintentional fall-related injuries are the leading cause of unintentional injury deaths for adults aged ≥65 years (*1,2*), and they can result in debilitating injuries (e.g., hip fractures among persons with osteoporosis). Each year, one third of adults aged ≥65 years reports at least one unintentional fall (*3,4*). Dying in a motor vehicle crash is also a concern among older adults, with drivers aged ≥65 years having higher rates of motor vehicle crash deaths than all except the youngest drivers (*5*). Although suicide research and awareness have often focused on youths, U.S. suicide rates have consistently been highest among older adults. Fear of being a victim of violence is also of concern among older adults, who might perceive themselves to be more vulnerable not only to violence outside the home but also to abuse by those on whom they are dependent. This report describes the magnitude of these types of injury and violence among older adults in the United States.

Fall-Related Deaths and Hospitalizations for Hip Fracture

Unintentional injuries are the seventh leading cause of deaths among adults aged ≥65 years in the United States. Of these deaths, the greatest number of fatalities result from unintentional fall-related injuries; nearly 8,500 adults in this age group died as a result of injuries from unintentional falls in 1996 (*1*). Sixty percent of all fall-related deaths in 1996 involved adults aged ≥75 years (*1*). Throughout the past two decades, surveillance data on unintentional fall-related injury have been limited, but available data indicate that unintentional falls accounted for 87% of fractures among adults aged ≥65 years treated in emergency departments during 1977 (*6*) and were the second leading cause of spinal cord and brain injury during 1981 and 1982 (*7*). Of adults aged ≥65 years, 5% were hospitalized for fall-related injury in 1989 (*8*). Advanced age substantially increases the likelihood of hospital admission following a fall-related injury (9). In 1994, the total direct cost of fall-related injuries among adults aged ≥65 years in the United States was an estimated $20.2 billion (*10*).

Hip fractures are one of the most serious outcomes associated with falls. Approximately 212,000 fall-related hip fractures occur each year among adults aged ≥65 years in the United States (*11*); 75%–80% of these injuries are sustained by women (*12*). Half of all older adults who suffer hip fractures never regain their former level of function (*13,14*). Medicare costs for hip fractures were estimated at $2.9 billion in 1991 (*15*).

Motor Vehicle-Related Injuries

In 1996, adults aged ≥65 years represented 13% of the U.S. population, yet they accounted for 17% of all motor vehicle-related deaths (*5,16*). Each year, approximately 7,000 adults aged ≥65 years die in motor vehicle crashes, and an additional 175,000 older adults sustain nonfatal injuries in motor vehicle crashes (*17,18*). These older adults are at risk for motor vehicle-related injury as vehicle occupants and as pedestrians. Nearly 80% of persons in this age group who died in motor vehicle-related crashes in 1997 were occupants of passenger vehicles, whereas approximately 16% were pedestrians (*18*). In 1996, 25.5 million of the 33.9 million adults aged ≥65 years were licensed drivers, accounting for approximately 1.2 billion vehicle miles traveled that year. The number of older adults who drive is expected to increase as the U.S. population ages.

Suicides

In 1996, suicide was the ninth leading cause of death among all persons in the United States (*19*). Adults aged ≥65 years accounted for 13% of the U.S. population in 1996, yet nearly one fifth of U.S. suicides.

Homicides

In 1996, homicide was the fourteenth leading cause of death among all persons in the United States. Approximately 5% of all homicides occurred among persons aged ≥65 years. Although homicide is a greater problem among younger adults — ranking as the sixth leading cause of death for adults aged 25–44 years (*1*) — fear of being a victim of violence affects older adults' quality of life (*20*). This fear can limit the participation of older adults in activities outside their homes as well as their use of and access to health care (*21*).

METHODS

Data Sources

Data on fall-related deaths, suicides, and homicides are from the mortality data tapes of CDC's National Center for Health Statistics (NCHS) (*22*). Cause-of-death data are based on the "medical certification of death" portion of the death certificate, which should be completed by the physician with the most complete knowledge of the patient's immediate antemortem medical course and past medical history or by a coroner or medical examiner (*23,24*). Original copies of the certificates are filed in state and other registration areas' vital statistics offices, where they are processed according to NCHS coding specifications or are sent to NCHS for processing (*25,26*). Death data from all registration areas are then entered into a national mortality database.

From the medical conditions reported on the death certificate, a single condition — the underlying cause of death — is selected for tabulation and analysis according to coding rules specified in the *International Classification of Diseases* (*ICD*) (*27,28*). The underlying cause is the disease or injury that set in motion the chain of morbid events

leading to death (e.g., chronic ischemic heart disease leading to an acute myocardial infarction) or the circumstances of the accident or violence that produced the fatal injury (e.g., gunshot wound to the thorax leading to a perforation of the heart) (*27*). The *ICD* also specifies how physicians are to report causes of death on death certificates; this specification is reflected in the design of the U.S. Standard Certificate of Death, which serves as a model for death certificates used by states and other registration areas (*24*).

Fall-Related Deaths and Hospitalizations for Hip Fracture

NCHS data on unintentional fall-related deaths include cases in which the underlying cause of death was coded as E880–E886 or E888, according to the *International Classification of Diseases, Ninth Revision* (*ICD-9*) (*27*). National estimates of hospital admissions for hip fracture are from the 1988–1996 National Hospital Discharge Surveys (NHDS), ongoing surveys conducted by NCHS (*29*). NHDS collects data from a sample of inpatient records acquired from a national probability sample of nonfederal, short-stay hospitals; data represent a sample of hospital discharges, not a sample of persons (i.e., one person with multiple discharges during the year might be counted more than once). In 1996, data were collected for approximately 282,000 patient discharges from 480 participating hospitals. Hospitalizations for hip fracture include cases in which the discharge diagnosis was coded as 820, according to the *International Classification of Diseases, Ninth Revision, Clinical Modification* (*ICD-9-CM*) (*30*).

Motor Vehicle-Related Injuries

Data for motor vehicle-related injury are from two sources — the Fatality Analysis Reporting System (FARS) and the General Estimates System (GES), which are maintained by the National Highway Traffic Safety Administration. FARS is a census of all fatal traffic crashes (within the 50 states, Puerto Rico, and the District of Columbia) that occur on a roadway customarily open to the public and that result in at least one death within 30 days of the crash. The fatality can affect a motor vehicle occupant (e.g., driver or passenger) or nonoccupant (e.g., pedestrian or cyclist) involved in the crash. The system compiles data on these crashes from police accident reports, state vehicle registration files, state driver's licensing files, state highway department data, vital statistics, death certificates, coroner and medical examiner reports, hospital medical reports, and emergency medical service reports (*17*). Most data on crash events come from police accident reports.

Data for estimates of nonfatal motor vehicle-related injury are from GES, a nationally representative sample of police-reported motor vehicle crashes of all severities, including death, nonfatal injury, and property damage. Data collectors make weekly visits to approximately 400 police jurisdictions at 60 U.S. sites, where they randomly obtain a sample of approximately 48,000 crashes annually (*17*).

Suicides

Suicide data are from 1990–1996 NCHS annual mortality data tapes; 1990 was selected as the starting point because that was the year most states reported ethnicity. Suicides include cases in which underlying cause-of-death codes E950–E959 were designated.

Homicides

Homicides are those deaths in which the underlying cause of death was coded as E960–E969 (these codes exclude legal intervention). The exact number of deaths will not match NCHS published reports, which include legal intervention. Firearm-related homicides are those deaths in which the underlying cause of death was coded as E965.0–E965.4. NCHS homicide data for 1987–1996 are supplemented with 1987–1996 information from the Federal Bureau of Investigation's Supplemental Homicide Reports (FBI-SHR), which provide information on the demographic characteristics of the victim and assailant, the relationship between the victim and assailant, the circumstances of the death, and the type of weapon used. FBI-SHR data are based solely on the reports of investigating law enforcement officials. These data are not linked with NCHS mortality data; however, the proportion of homicide victims in corresponding demographic categories have been shown to be highly congruent between these two sources (*31*).

How Rates Were Calculated

National and state-specific rates of hospital admissions for hip fracture were computed by using civilian population estimates from the U.S. Bureau of the Census. Regional rates were calculated for U.S. regions designated by the U.S. Bureau of the Census.*

National and state-specific death rates were computed by using U.S. decennial census counts and mid-year intercensal and postcensal population estimates for adults aged ≥65 years from the U.S. Bureau of the Census (*16*). Because of the limited age range, rates were not age-adjusted. Death rates were calculated per 100,000 U.S. population. Because of the minimal number of motor vehicle-related deaths in some states, a different methodology was used to calculate state-specific rates. To increase the stability of state estimates, the average annual rate for 1990–1997 for each state was calculated.

For rates of fall-related death and hip fracture hospitalization, race was categorized as white, black, other, or unspecified. Three states were excluded from the analysis of suicide rates by ethnicity during the years in which they did not record ethnicity data: Louisiana (1990), New Hampshire (1990–1992), and Oklahoma (1990–1996).

With the exception of the FBI-SHR data, findings for any subgroup that generated estimates with relative standard errors ≥30% were not reported. With the same exception, reported differences and trends were significant ($p \leq 0.05$) unless otherwise noted. No statistical testing was done for analyses of the FBI-SHR data, and these findings should therefore be considered descriptive in nature.

*Northeast=Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont; Midwest=Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin; South=Alabama, Arkansas, Delaware, District of Columbia, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, and West Virginia; and West=Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming.

RESULTS

Fall-Related Deaths and Hospitalizations for Hip Fracture

Rates of fall-related deaths for men and women increased substantially with increasing age and were consistently higher among men in all age categories (Table 1). Overall, men were 22% more likely than women to sustain fatal falls. Men aged ≥85 years were 43% more likely to die as a result of falls than were women in the same age category. For both men and women, rates were higher for whites than for blacks. In 1996, the pattern of state-specific fall-related death rates was similar for men and women. The Midwest region had the highest rates of fall-related deaths for both men and women (Table 1). Rates of fall-related death increased from 1987 through 1996 in the United States, although rates were consistently lower for women throughout this period (Figure 1).

In 1996, rates of hospitalization for hip fracture differed by age and race for both men and women (Table 2). Rates increased with age for both sexes but were consistently higher for women in all age categories. Women aged ≥85 years were almost eight times more likely to be hospitalized for hip fractures than women aged 65–74 years. Among adults aged ≥85 years, the rate of hospitalization for hip fracture was

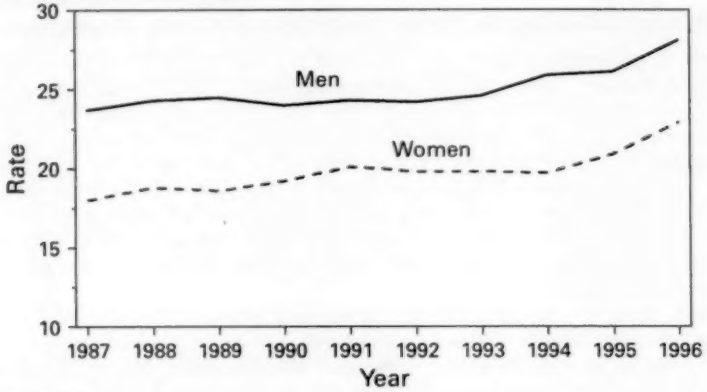
TABLE 1. Rate* of fall-related death among adults aged ≥65 years, by selected characteristics — United States, 1996†

Characteristic	Men (n = 3,895)		Women (n = 4,579)	
	No.	Rate	No.	Rate
Age group (yrs)				
65–74	960	11.5	544	5.3
75–84	1,563	34.8	1,618	23.3
≥85	1,372	128.3	2,417	89.8
Race§				
White	3,649	29.3	4,349	24.4
Black	180	16.7	170	10.1
Region¶				
Northeast	684	23.4	784	17.8
Midwest	1,086	32.9	1,327	27.5
South	1,294	26.8	1,612	23.1
West	831	29.5	856	22.7

*Per 100,000 population.
†Sample size = 8,474.
§Race-specific data are presented only for blacks and whites because sample sizes for other racial groups were too small for meaningful analysis. Race was categorized as "other or unspecified" for 66 men and 60 women.
¶Northeast=Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont; Midwest=Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin; South=Alabama, Arkansas, Delaware, District of Columbia, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, and West Virginia; and West=Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico Oregon, Utah, Washington, and Wyoming.

Source: National Center for Health Statistics, CDC.

FIGURE 1. Rate* of unintentional fall-related death among adults aged ≥65 years, by sex — United States, 1987–1996



*Per 100,000 population.

Source: National Center for Health Statistics, CDC.

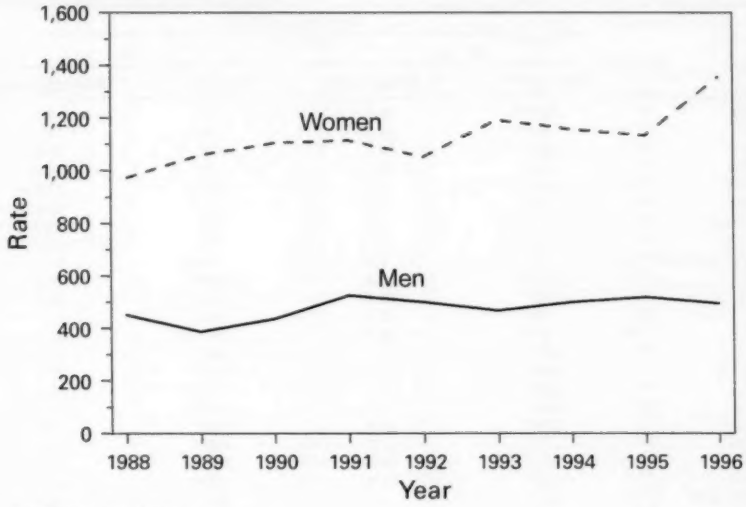
TABLE 2. Rate* of hospitalization for hip fracture among adults aged ≥65 years, by selected characteristics — United States, 1996†

	Men (n = 68,783)			Women (n = 270,909)		
Characteristic	**No.**	**Rate**	**(95% CI§)**	**No.**	**Rate**	**(95% CI)**
Age group (yrs)						
65–74	123	168.0	(112.2– 225.2)	347	501.1	(411.0– 591.2)
75–84	254	682.1	(560.4– 803.7)	845	1,620.3	(1,440.4–1,800.2)
≥85	194	2,256.2	(1,611.3–2,901.0)	811	3,958.3	(3,471.6–4,445.0)
Race¶						
White	387	413.0	(335.5– 490.6)	1,342	1,174.0	(1,050.9–1,297.1)
Black	17	**		54	230.0	(128.9– 331.0)
Region††						
Northeast	116	466.9	(359.3– 574.6)	442	1,191.2	(1,020.3–1,362.1)
Midwest	177	519.5	(395.5– 643.5)	630	1,514.7	(1,259.6–1,769.8)
South	194	540.7	(383.4– 697.9)	628	1,354.4	(1,115.7–1,593.1)
West	83	419.7	(267.0– 572.3)	303	1,347.3	(1,043.9–1,650.6)

*Per 100,000 population.
†Unweighted sample size = 2,574.
§Confidence interval.
¶Race-specific data are presented only for blacks and whites because sample sizes for other racial groups were too small for meaningful analysis.
**Relative standard error >30%.
††Northeast=Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont; Midwest=Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin; South=Alabama, Arkansas, Delaware, District of Columbia, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, and West Virginia; and West=Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming.

Source: National Center for Health Statistics, CDC.

FIGURE 2. Rate* of hospitalization for hip fracture among adults aged ≥65 years, by sex — United States, 1988–1996



*Per 100,000 population.

Source: National Hospital Discharge Survey.

1.8 times higher among women than among men. Within racial categories, hip fracture hospitalization rates were highest among white women and were approximately three times higher for women than men. Sex-specific rates were similar for all geographic regions.

Rates of hospitalization for hip fracture increased from 1988 through 1996 (Figure 2). Rates for men remained stable.

Motor Vehicle-Related Injuries

Deaths

National rates of motor vehicle-related death indicated a small increase (4.5%) for adults aged ≥65 years, from 20.6 per 100,000 persons in 1990 to 21.5 in 1997. These rates included deaths to vehicle occupants and nonoccupants (e.g., pedestrians). For adults aged 65–74 years, rates were as low as 7.9 per 100,000 persons in the District of Columbia and as high as 30.1 deaths per 100,000 persons in Mississippi; the rate for all states combined was 17.0. For the oldest group (adults aged ≥75 years), rates were as low as 8.9 in Rhode Island and as high as 39.3 deaths per 100,000 persons in Georgia; the rate for all states combined was 25.8. For any given state, rates appear to be higher in the ≥75-year age group (Table 3). In most states, men had rates of motor vehicle-related death that were nearly twice the rates for women (Table 4).

TABLE 3. Number and rate of fatal motor vehicle-related injuries among adults aged ≥65 years, by age group and state — United States, 1990–1997

	Age group (yrs)			
	65–74		≥75	
State	8-yr no.*	Average rate†	8-yr no.*	Average rate†
Alabama	631	25.5	664	35.3
Alaska	38	25.4	24	34.2
Arizona	524	20.7	617	33.8
Arkansas	392	25.0	371	28.8
California	2,383	15.5	2,738	23.8
Colorado	301	18.0	320	26.1
Connecticut	193	9.6	249	14.9
Delaware	76	18.1	80	28.3
District of Columbia	27	7.9	38	14.2
Florida	1,895	16.6	2,653	29.5
Georgia	812	25.1	926	39.3
Hawaii	73	10.7	102	22.7
Idaho	161	28.2	168	36.0
Illinois	827	12.7	1,043	19.9
Indiana	592	18.3	657	26.1
Iowa	296	16.6	379	22.8
Kansas	294	20.0	370	27.9
Kentucky	507	23.4	559	33.5
Louisiana	397	17.7	430	26.3
Maine	145	19.4	207	34.1
Maryland	400	15.4	453	24.7
Massachusetts	344	9.4	491	15.8
Michigan	882	16.5	1,174	29.2
Minnesota	383	16.1	586	27.2
Mississippi	440	30.1	414	35.7
Missouri	630	19.8	777	28.8
Montana	114	23.3	125	30.8
Nebraska	176	18.7	244	28.0
Nevada	219	26.4	154	33.6
New Hampshire	93	15.6	135	28.4
New Jersey	665	13.6	827	22.3
New Mexico	211	25.3	211	35.5
New York	1,354	12.6	1,741	20.6
North Carolina	837	20.5	923	31.9
North Dakota	60	16.1	75	20.4
Ohio	835	12.5	1,022	20.3
Oklahoma	398	20.7	492	32.4
Oregon	307	16.9	393	26.2
Pennsylvania	1,086	12.8	1,330	20.1
Rhode Island	57	8.5	50	8.9
South Carolina	473	23.1	409	30.0
South Dakota	91	21.0	113	28.2
Tennessee	697	23.7	762	34.1
Texas	1,587	18.6	1,753	27.9
Utah	152	20.1	177	30.7
Vermont	53	15.5	81	32.5
Virginia	531	15.9	596	25.2
Washington	345	12.6	478	22.0
West Virginia	217	17.4	253	26.8
Wisconsin	403	14.0	634	25.4
Wyoming	67	28.4	57	32.8
Total	**24,671**	**17.0**	**29,525**	**25.8**

*Total number of deaths in 8-year period.
†Average annual death rate per 100,000 age-specific population for 8-year period.

Source: Fatality Analysis Reporting System, National Highway Traffic Safety Administration.

TABLE 4. Number and rate of fatal motor vehicle-related injuries among adults aged ≥65 years, by sex and state — United States, 1990–1997

State	Men		Women		Total*	
	8-yr no.†	Average rate§	8-yr no.†	Average rate§	8-yr no.†	Average rate§
Alabama	751	43.9	544	20.6	1,295	29.7
Alaska	32	30.8	30	25.8	62	28.2
Arizona	631	33.3	510	20.7	1,141	26.2
Arkansas	432	36.9	331	19.6	763	26.7
California	2,876	22.6	2,245	14.3	5,121	19.0
Colorado	363	30.0	258	15.2	621	21.4
Connecticut	220	15.0	222	10.0	442	12.0
Delaware	78	26.9	78	18.9	156	22.2
District of Columbia	37	16.4	28	7.3	65	10.7
Florida	2,542	29.1	1,193	17.1	4,548	22.3
Georgia	985	45.5	753	22.0	1,738	31.1
Hawaii	100	19.0	75	12.4	175	15.5
Idaho	189	41.6	140	24.0	329	31.7
Illinois	1,017	21.8	853	12.0	1,870	15.9
Indiana	678	29.6	571	16.5	1,249	21.7
Iowa	370	26.8	305	14.8	675	19.6
Kansas	377	33.4	287	17.2	664	23.8
Kentucky	609	39.7	457	19.8	1,066	27.8
Louisiana	490	31.7	337	14.4	827	21.3
Maine	190	34.7	162	20.1	352	26.0
Maryland	455	25.5	398	15.0	853	19.2
Massachusetts	457	17.4	378	9.1	835	12.3
Michigan	1,099	28.8	957	17.2	2,056	21.9
Minnesota	516	27.9	453	16.9	969	21.4
Mississippi	520	50.4	334	21.0	854	32.6
Missouri	805	34.4	602	17.1	1,407	24.0
Montana	141	36.2	98	19.4	239	26.7
Nebraska	249	33.9	171	15.9	420	23.2
Nevada	215	36.2	158	22.8	373	29.0
New Hampshire	115	26.4	113	17.8	228	21.3
New Jersey	791	23.0	701	13.6	1,492	17.4
New Mexico	246	39.6	176	21.8	422	29.5
New York	1,633	21.6	1,462	12.6	3,095	16.1
North Carolina	978	35.6	782	18.5	1,760	25.2
North Dakota	84	26.8	51	12.0	135	18.2
Ohio	981	21.0	876	12.5	1,857	15.9
Oklahoma	512	36.1	378	18.2	890	25.5
Oregon	399	28.3	301	15.8	700	21.1
Pennsylvania	1,307	21.9	1,109	12.2	2,416	16.0
Rhode Island	58	12.2	49	6.5	107	8.7
South Carolina	524	38.6	358	17.4	882	25.8
South Dakota	118	33.5	86	17.8	204	24.5
Tennessee	832	40.7	627	20.0	1,459	28.2
Texas	1,943	32.1	1,397	16.0	3,340	22.6
Utah	178	30.8	151	20.0	329	24.7
Vermont	77	34.1	57	17.4	134	24.2
Virginia	631	27.6	496	14.5	1,127	19.7
Washington	451	21.7	372	13.2	823	16.8
West Virginia	263	29.9	207	15.8	470	21.5
Wisconsin	552	25.0	485	15.3	1,037	19.3
Wyoming	76	42.6	48	20.8	124	30.3
Total	**30,173**	**28.3**	**24,010**	**15.4**	**54,196**	**20.6**

*Includes persons for whom sex is unknown.
†Total number of deaths in 8-year period.
§Average annual death rate per 100,000 age-specific population for 8-year period.

Source: Fatality Analysis Reporting System, National Highway Traffic Safety Administration.

The number of older adults dying in traffic crashes increased 14% — from 6,427 in 1990 to 7,326 in 1997. For drivers only, the number of deaths increased 30%. Information about the number of licensed drivers during this period was available for the years 1990 through 1995. During this time, the number of licensed drivers aged ≥65 years increased 13%, and the proportion of licensed drivers aged ≥65 years increased from 13% to 14% (*32*). Thus, some of the increase in deaths among older drivers during the study period would be expected because of the increased number of drivers.

Patterns of deaths for pedestrians differed from those for drivers. In a comparison of 1990 and 1997 data, the number of older pedestrians dying decreased 23%.

Nonfatal Injuries

In the United States, an estimated 1,869,308 nonfatal motor vehicle-related injuries were reported for older adults from 1990 through 1997. Although both the rate and number of nonfatal motor vehicle-related injuries increased during the study period, these increases did not reach statistical significance. The rate of nonfatal injury for adults aged ≥65 years increased 9%, from 684 per 100,000 persons in 1990 to 748 in 1997. The number of nonfatal injuries was estimated from a national sample of cases that were designed to be representative of the nation as a whole; therefore, reporting estimates by state was not possible. The number of nonfatal injuries increased 19% overall, from 213,463 in 1990 to 254,799 in 1997. For drivers aged ≥65 years, the number of nonfatal injuries increased 21%, from 143,997 in 1990 to 174,609 in 1997. For pedestrians aged ≥65 years, the number of nonfatal injuries declined 24%, from 9,092 in 1990 to 6,897 in 1997.

Suicides

Approximately 43,000 (20%) of the 216,631 suicides that occurred in the United States from 1990 through 1996 involved adults aged ≥65 years. The annual number of suicides among adults in this age group decreased 8.4%, from 6,394 in 1990 to 5,855 in 1996 (Figure 3). In comparison, rates for this age group decreased 16%, from 20.6 to 17.3 per 100,000 persons. Men accounted for 82% of suicides among adults aged ≥65 years; from 1990 through 1996, the rate for men decreased 15%, from 41.6 to 35.2 per 100,000 persons. For women, the rate decreased 25%, from 6.4 to 4.8 per 100,000 persons.

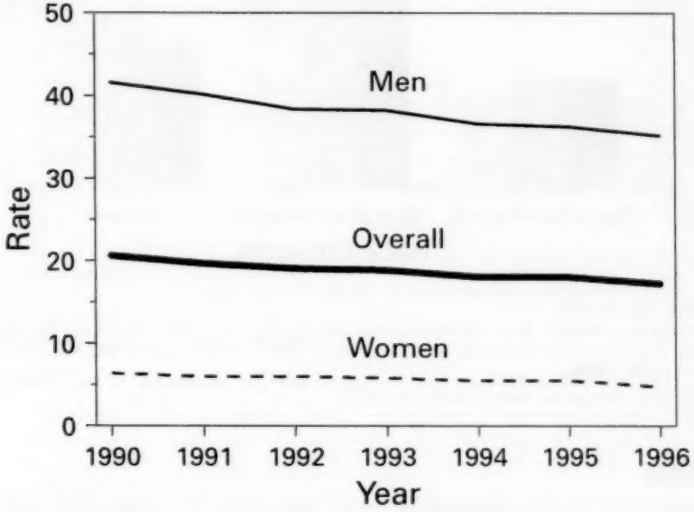
For the period 1990 through 1996, the rate of suicide among adults aged 65–74 years was greater than the rate for those aged 75–84 years; however, the rate remained unchanged between the 75–84-year age group and the ≥85-year age group (Table 5). Suicide rates among men aged ≥85 years were higher (65 per 100,000 persons) than rates among those aged 65–74 years and 75–84 years. Among women, suicide rates were lowest among those aged ≥85 years, but the difference in rates between age groups was not significant. Men had a higher overall suicide rate (38 per 100,000 persons) than women (5.7 per 100,000 persons).

Firearm use was the predominant suicide method for both men and women. Firearm-related suicides accounted for 70% of all suicides among adults aged ≥65 years during the years 1990 through 1996 (77.3% of suicides among men

compared with 34.4% among women). Poisoning was the second most common method among men (12%) and women (29%).

Suicide rates among adults aged ≥65 years also varied by race and ethnicity (Figure 4). Rates increased steadily for persons of Hispanic ethnicity for each 10-year age interval; however, the difference between the 75–84-year age group and the ≥85-year age group was not significant. For black persons not of Hispanic ethnicity, the rate was similar in each 10-year age group. For white persons not of Hispanic ethnicity, the rate for those aged 65–74 years was lower than rates for the other age groups.

FIGURE 3. Rate* of suicide among adults aged ≥65 years, by sex — United States, 1990–1996



*Per 100,000 population.

Source: National Center for Health Statistics, CDC.

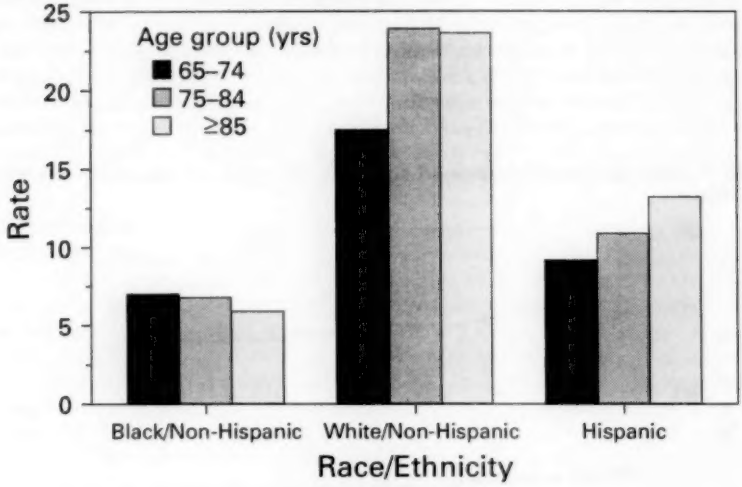
TABLE 5. Rate* of suicide for adults aged ≥65 years, by sex and age group — United States, 1990–1996

Age group (yrs)	Men		Women		Total	
	No.	Rate	No.	Rate	No.	Rate
65–74	16,869	29.5	4,154	5.7	21,023	16.2
75–84	14,022	48.8	2,628	5.7	16,650	22.2
≥85	4,321	65.0	955	5.6	5,276	22.2
Total	**35,212**	**38.0**	**7,737**	**5.7**	**42,949**	**18.8**

*Per 100,000 population.

Source: National Center for Health Statistics, CDC.

FIGURE 4. Rate* of suicide among adults aged ≥65 years, by age group and race/ethnicity† — United States, 1990–1996



*Per 100,000 population.
†Suicide rates by ethnicity were excluded from the analysis for three states during the years when they did not record ethnicity data: Louisiana (1990), New Hampshire (1990–1992), and Oklahoma (1990–1996).

Source: National Center for Health Statistics, CDC.

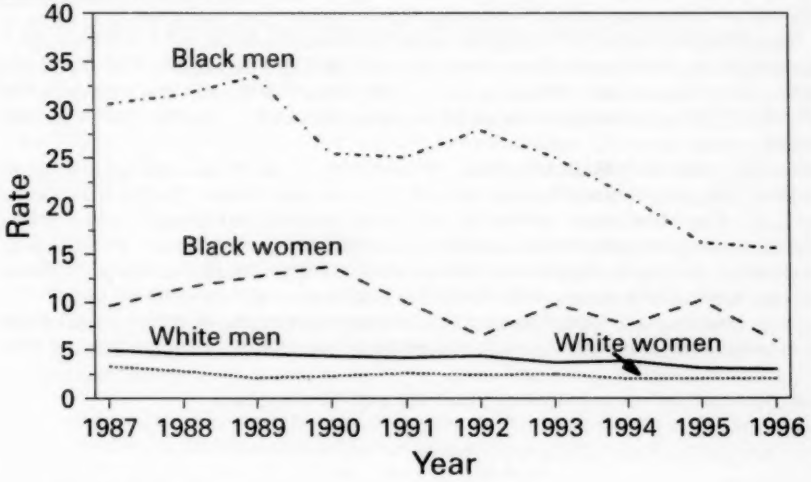
Homicides

The rate of homicides among adults aged ≥65 years decreased 36% from 1987 through 1996. A downward trend was observed in homicide rates, from 4.6 per 100,000 persons in 1987 to 2.9 per 100,000 persons in 1996. The overall rate for homicides related to firearms use decreased 30%, from 1.6 per 100,000 persons in 1987 to 1.1 per 100,000 persons in 1996. A slight increase in firearm-related homicides was observed in 1990.

In 1996, the rate of homicide was 4.1 per 100,000 among men and 2.1 per 100,000 among women aged ≥65 years. Throughout the 10-year period, homicide rates were highest for black men, followed by black women and white men (Figure 5). Homicide rates decreased 49% for black men and 38% for black women. The homicide risk for blacks relative to whites decreased from 4.8 in 1987 to 3.9 in 1996.

From 1987 through 1990, the highest overall homicide rates for adults aged ≥65 occurred among those aged ≥85 years (Figure 6). Beginning in 1994, however, rates were similar for all age groups. The homicide rate decreased for each age group from 1987 through 1996. For the oldest age group (≥85 years), rates began decreasing from the 10-year high of 5.2 per 100,000 persons in 1987 to 2.9 per 100,000 persons in 1996. This corresponds with a 44% decrease in rates.

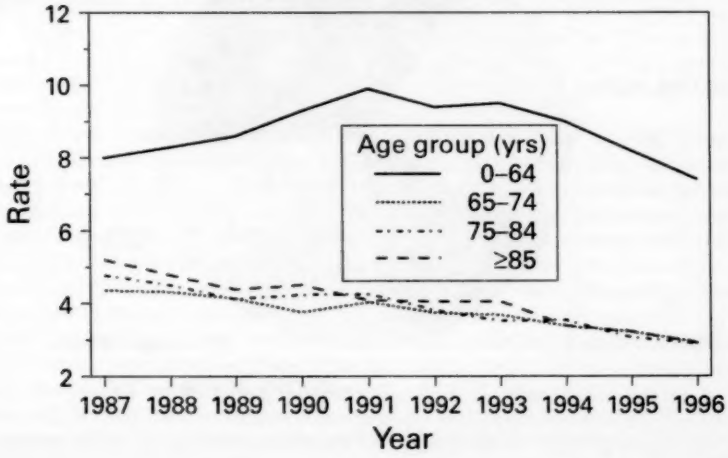
FIGURE 5. Rate* of homicide among adults aged ≥65 years, by race† and sex — United States, 1987–1996



*Per 100,000 population.
†Race-specific data are presented only for blacks and whites because sample sizes for other racial groups were too small for meaningful analysis.

Source: National Center for Health Statistics, CDC.

FIGURE 6. Rate* of homicide, by age group — United States, 1987–1996



*Per 100,000 population.

Source: National Center for Health Statistics, CDC.

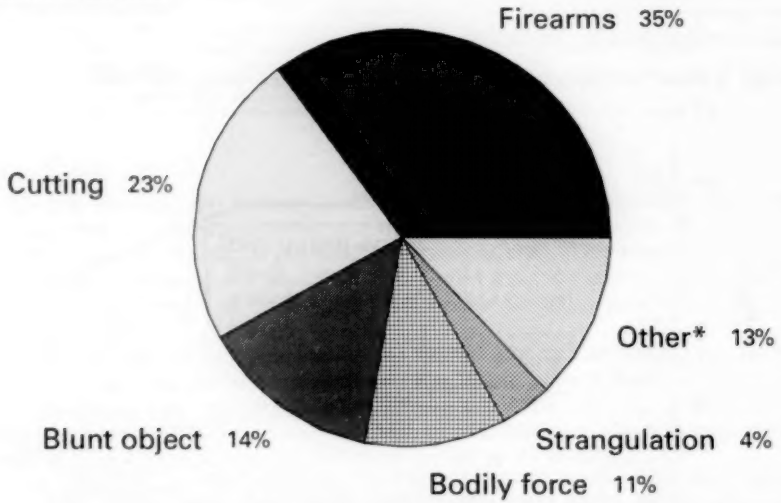
For the period 1987 through 1996, rates of firearm-related homicide were 25% higher for persons aged 65–74 years than for those aged 75–84 years. The rate was 32% higher for persons aged 75–84 years than for those aged ≥85 years.

Because the number of homicides caused by firearm use did not decline as much as the number of all homicides during the study period, the proportion of homicides attributed to firearm use increased: homicides caused by firearm use accounted for 35% (478/1,355) of homicides among adults aged ≥65 years in 1987 and 39% (382/989) in 1996.

According to FBI-SHR data for 1996, a total of 35% of homicides among older adults involved firearms (Figure 7), with 72% of these firearm-related deaths involving a handgun. The other most commonly reported methods of homicide were cutting (23%), use of blunt objects (14%), bodily force (11%), and strangulation (4%). Other, or unspecified, means accounted for 13% of all homicides. These relative proportions changed only slightly during 1987–1996. The proportions did not differ by race.

From 1987 through 1996, a total of 50% of older adult homicide victims were killed by a person they knew: 25% by a family member and 25% by an acquaintance. This proportion was similar to the proportion for all homicides in the United States (*33*). In most homicides, the victim and assailant were of the same race.

FIGURE 7. Percentage of homicides among adults aged ≥65 years, by method — United States, 1996



*Poisoning, being pushed or thrown out of window, arson, drowning, use of explosives, and narcotics use.

Source: Federal Bureau of Investigation's Supplemental Homicide Reports.

DISCUSSION

Fall-Related Deaths and Hospitalizations for Hip Fracture

Older adults are at higher risk for fatal falls compared with persons aged ≤64 years, and this risk increases sharply with increasing age. In this analysis, the rate of death from unintentional falls was higher for men than women in all age categories. This disparity is well known (*2*), but the reasons remain unclear. The circumstances of the falls were listed as "other or unspecified" for 71.3% of unintentional fall-related fatalities in 1996. The rate among older men might be higher because men have a higher prevalence of comorbid conditions than women of similar ages. Frail adults (i.e., those with impaired strength, mobility, balance, and endurance) are twice as likely to fall as healthier persons (*34*) and might sustain more severe injuries. Rates of unintentional fall-related death were lower for blacks, an observation reported by others (*35*). The likely reason is that blacks aged ≥65 years in the United States have greater bone mass (*36*) and are less likely to sustain fall-related hip fractures than whites of comparable ages (*37*).

Unintentional fall-related death rates gradually increased from 1987 tnrough 1996. This trend might be related, in part, to a reduction in mortality from cardiovascular and other chronic diseases. Adjusting the rates to account for the changing age distribution in the U.S. population did not alter these findings.

Since 1988, rates of hospitalization for hip fracture among women have steadily increased. One of the *Healthy People 2000* objectives (objective 9.7) is to reduce the overall rate of hospitalization for hip fracture among adults aged ≥65 years to no more than 607 per 100,000 persons (*38*). The 1996 rate was 1,003 per 100,000 persons — 32% higher than the 1988 rate of 761 per 100,000.

Hospitalization rates were consistently higher for women than men. In 1996, white women aged ≥65 years had 5.1 times the risk for being hospitalized for hip fracture as black women. Another *Healthy People 2000* objective (objective 9.7a) is to reduce rates of hospitalization for hip fracture among white women aged ≥85 years to no more than 2,177 per 100,000 (*38*). The 1996 rate was 3,271 per 100,000, which is almost 18% higher than the 1988 baseline rate.

This analysis has several limitations. First, conclusions about the magnitude of the injury problem among older adults rely on injury information being recorded accurately on death certificates. If fall injury-related deaths were undercounted because injury was not recorded, the fall death rates in this report would underestimate the impact of this injury. The underlying cause of death is determined from the listed diagnoses in Part 1 of the death certificate. When a person dies of injuries, the external cause of the injury (e.g., fall) should be listed in Part 1 of the death certificate and will be recorded as the underlying cause of death; however, external cause-of-injury data might not be as reliably recorded for older adults as for younger persons. Using Los Angeles data, researchers reviewed a section on the 1980 California death certificate designated "Injury Information, Coroner's Use Only" to identify, by age group, injury deaths that had not been coded as injuries and thus determine what proportion these deaths represented among those deaths coded as injuries (*39*). Of the deaths coded as injury for persons aged ≥65 years, an additional 46% of deaths were identified that appeared to be injury deaths that had been inaccurately coded as noninjury deaths; in

comparison, an additional 5% of such deaths were identified for persons aged ≤55 years. Thus, estimates of fall-related death rates in this report might be conservative for persons aged ≥65 years.

Second, NHDS identifies hospital admissions, not actual persons. Therefore, a person who is treated for a hip fracture, discharged, and readmitted for additional treatment could receive a second discharge diagnosis of hip fracture. Although such duplications probably represent a small proportion of admissions, they could not be omitted from the analysis because NHDS does not include personal identifiers. Thus, NHDS slightly overestimates rates of hospitalizations for hip fracture. Moreover, because race was unspecified for 19.5% of the 1996 hospital admissions, race-specific rates were underestimated.

Because adults aged ≥65 years are the fastest growing age group in the U.S. population, the burden of falls and hip fractures will likely increase unless fall prevention strategies are improved for this group. Risk factors for falls include both personal factors (e.g., neurologic and musculoskeletal disabilities, difficulties with gait and balance, use of psychoactive medications, and visual impairments) and environmental hazards (e.g., poor lighting, slippery surfaces, loose rugs, and other tripping hazards). The most effective fall prevention programs have reduced falls in select populations by 30%–50% by using a multifaceted approach that includes education, exercise (e.g., Tai Chi to improve strength, balance, and coordination), medication review, risk factor reduction, and home safety modifications (*14,40,41*). For these interventions to be effective, older adults must take an active role to reduce their risk for falling. Because most older adults live independently, fall prevention programs must include effective strategies to promote behavioral changes. Innovative and effective fall prevention strategies are needed to reduce morbidity and mortality associated with fall-related injuries, to increase independence, and to improve the quality of life for the growing number of older adults. In addition to behavioral and environmental interventions to prevent falls (*14,41–43*), new approaches, including protective hip pads (*44*) and impact-absorbing floor materials, offer promise to reduce the incidence of hip fractures among older adults.

Motor Vehicle-Related Injuries

Rates of motor vehicle-related morbidity and mortality increased slightly for older adults during 1990–1997, and rates for males were higher than those for females. During the 8-year study period, approximately 55,000 adults aged ≥65 years died as a result of traffic crashes, and an estimated 1,869,308 others were nonfatally injured. These numbers represent a costly burden to the health-care system and to society.

The increased risk for motor vehicle-related injury to older adults has many possible explanations, including visual deterioration, declines in cognitive skills (e.g., processing speed and ability), and deterioration of motor skills (*45*). Also, physical frailty increases susceptibility to injury in a crash. The same severity of crash might cause the death of an elderly vehicle occupant yet result in nonfatal injuries to a younger person. Other factors tend to moderate the overall magnitude of the problem. For example, a smaller proportion of older adults have driver's licenses compared with younger groups, and they drive fewer miles per licensed driver (*5*). In addition,

adults aged ≥65 years are the most likely group to wear seat belts and the least likely group to report drinking and driving or riding with a drunk driver (*46–49*).

To prevent these deaths and injuries, specific risk factors for older adults must be considered and interventions must be tailored to reduce risk. Interventions could be aimed at changes in the vehicle, the traffic and road environment, or the behavior of older adults. For example, drivers could be aided by increasing the size and illumination of instrument panel dials and road signs for better nighttime readability (*50,51*). Also, drivers could be assisted in assessing their own driving ability. Many older drivers impose partial driving restrictions on themselves (e.g., driving during nonpeak traffic hours or driving only on familiar roads) (*52*). These restrictions tend to decrease their amount of driving and, consequently, their overall crash risk. For drivers who cannot adequately assess their driving ability because of functional or cognitive impairment, a more rigorous screening and testing program might be necessary (*53–56*).

Older pedestrians might be aided by environmental alterations (e.g., changing the timing of traffic signals or installing median islands for refuge on wide roadways) (*57*). In addition, problems judging traffic speed and the time required to cross a road might require remediation (e.g., visual correction, walking aids, or changing crossing styles) (*57,58*). The efficacy of interventions should be evaluated to reduce the risk for motor vehicle crashes and injuries involving older adults.

Suicides

This report documents a change in the trend of suicide rates among older adults. For the period 1990–1996, suicide rates for adults aged ≥65 years decreased. Men had a higher overall suicide rate than women (38 vs. 5.7 per 100,000 persons). Among men and women, suicide rates varied by age.

Some risk factors and protective factors for suicide are similar for older and younger adults; however, the importance of these factors might differ by age group (e.g, the intensity of depressive symptoms, use of highly lethal methods, and social isolation) (*59*). Participation in religious services has been identified as a protective factor against suicidal behavior (*60*). Religious participation and its associated belief system might exert a differing influence among older and younger adults. In addition, older adults make fewer attempts per completed suicide, have a higher male-to-female ratio, have more often visited a health-care provider shortly before their death, and have more physical illnesses and affective disorders than younger persons (*61*).

The declining suicide rate among adults aged ≥65 years could be related to changes in the effect or type of risk factors traditionally occurring among older adults (e.g., depression, social isolation, chronic illness). Perhaps the importance of these factors has changed or the prevalence of protective factors has increased.

Because older adults have the highest suicide rates, prevention research should focus on factors associated with suicide among older adults. For example, prevention strategies might need to be tailored to specific age, sex, and racial/ethnic groups. The role of protective factors in preventing suicide among older adults should also be more closely explored and should be integrated into prevention strategies. Recent cohort studies indicate that suicide rates are higher among younger adults today than they were when their grandparents were young adults (*62*). As these younger adults

age, their suicide rates might increase above current rates among older adults (*62*). However, in some birth cohorts, suicide rates might be higher because of the relative size of the group (i.e., larger cohorts might face increased stressors because of greater competition for resources and a disparity between their expectations and the means to satisfy those expectations) (*62*).

These findings underscore the need for suicide prevention activities directed at older adults. Strategies for reducing suicide rates among older adults include training primary-care providers to better recognize suicidal risk factors, including depressive disorders, and to make appropriate referrals. These strategies have been effective in reducing suicide risk among older adults (*63*). Community-based interventions to identify and treat persons at risk also have been shown to be effective (*64*). Other prevention strategies include senior peer-counseling programs; suicide prevention efforts that target persons at high risk; improvements in mental health services through suicide prevention centers; and programs that increase awareness of risk factors and protective factors among persons who have frequent contact with older adults (*63*).

Homicides

The findings in this report confirm that homicide rates among older adults decreased from 1987 through 1996 in the United States. Moreover, homicide rates among older adults decreased at a time when rates were increasing in all other age groups. The increasing rates observed among adults aged ≤64 years until 1993 were driven by increases in firearm-related homicides among younger persons (aged 15–24 years) (*65*). The differences in rates between older and younger adults in this analysis might be related to the substantially lower proportion of firearm-related homicides among older adults (39%) than in the total U.S. population (72%) (*65*).

The racial patterns among older homicide victims were similar to those among younger adults. Homicide rates were higher among blacks than whites and remained highest among black males. However, the disparity between blacks and whites was lower among older adults (4:1) compared with the U.S. population (6:1) (*1*). Reasons are unclear as to why blacks consistently have higher rates of homicide than whites; however, research indicates that racial differences in homicide rates nearly disappear when socioeconomic status is considered (*66*). Other commonly raised factors for consideration include prior exposure to violence, involvement with drugs, and the accessibility of firearms. The increased black-white homicide differential seen among younger adults reflects the disproportionately high rates among young, black, male victims; these rates decrease with age, beginning at approximately 35 years of age.

Half of the older homicide victims included in this analysis were killed by someone they knew, usually someone of the same race. Older adults tend to spend less time engaged in activities outside of the home than younger adults, thus limiting their exposure to strangers. Increased interpersonal contact with potential offenders by older adults, along with their increased fragility, might be important reasons for this finding. In cases of elder abuse, the abusers are most often adult children, followed by spouses and other relatives. These findings, however, vary among different studies (*67*).

Perceived risk of being a victim of violence among older adults might be greater than actual risk (*68*). This "victimization-fear paradox" among older adults is related to their perception of having a higher physical vulnerability than younger persons (*69*). When this fear of being a victim diminishes their quality of life, intervention is necessary. Interventions must be informed by an accurate description of the problem and identification of risk factors.

Homicide and violence prevention strategies require integration of approaches from various disciplines (e.g., criminal justice, social services, education, community advocacy, and public health). Conventional approaches to reduce homicide are described elsewhere (*65*). For violence among older adults, interventions are needed that promote public and professional awareness of the problem; promote good mental health (e.g., reduce depression), independence, and social contact; buffer stressful life events; and teach conflict resolution without violence (*70*). Also recommended are interventions that provide chore social services (e.g., meals, homemaking), which can help alleviate the stress and resentment of the caregiver (*71*).

The links between homicide, assault, and elder abuse are not well defined, but considerable evidence, including findings in this report, bolsters the need to target family members and persons known to the victim. In addition, teaching family members and friends who are not direct caregivers to recognize signs of physical abuse and neglect is important because these persons can facilitate reporting and referral when appropriate. Education for older adults should inform them of their actual risk — including whom they are most at risk from — and promote healthy coping strategies that will reduce their fear and help keep them safe from violence.

Issues of family integrity and care for older adults pose significant challenges to efforts by public health and criminal justice organizations to design appropriate and effective intervention strategies. Continued surveillance for homicide, the removal of reporting barriers for all forms of violence, and expanded epidemiologic research and evaluation should help to reduce the burden of fatal and nonfatal forms of violence among older adults.

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Surveillance for Use of Preventive Health-Care Services by Older Adults, 1995–1997

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Abstract

Problem/Condition: In 1995, a total of 55 million persons aged ≥55 years lived in the United States. The members of this large and growing segment of the population are major consumers of health care. Their access to medical and dental preventive services contributes to their likelihood of healthy later years and influences their long-term impact on the health-care delivery system.

Reporting Period: 1995–1997.

Description of Systems: This report summarizes data from the National Health Interview Survey (NHIS), the state-based Behavioral Risk Factor Surveillance System (BRFSS), and the Medicare Current Beneficiary Study (MCBS) to describe national, regional, and state-specific patterns of access to and use of preventive services among persons aged ≥55 years.

Results: During 1995–1997, approximately 90% of persons aged ≥55 years living in the United States reported having a regular source of health-care services. However, only

75%–80% reported receiving a routine checkup during the preceding 2 years. The estimated percentage of persons who reported not being able to receive medical care because of cost was highest for those aged 55–64 years. Within this age group, the percentage was highest among Hispanics (4%) and persons without a high school diploma. Approximately 11% of Medicare beneficiaries reported delaying care because of cost or because they had no particular source of care. Percentage estimates varied according to age, race/ethnicity, and sociodemographic status. Approximately 95% of persons aged ≥55 years reported having their blood pressure checked during the preceding 2 years, but only 85%–88% had received a cholesterol evaluation during the preceding 5 years. The percentage of women receiving breast and cervical cancer screening decreased with increasing age, and the percentage of persons aged ≥55 years who had received some form of screening for colorectal cancer was low — approximately 25% for fecal occult blood testing (FOBT) and 45% for endoscopy. State-specific rates of compliance with vaccination recommendations among persons aged ≥65 years were higher for influenza vaccine (range: 54%–74%) than for pneumococcal vaccine (range: 32%–59%), and compliance increased with advancing age. State-specific estimates of the percentage of annual dental visits varied 40%–75%, and 41%–88% of persons aged ≥65 years reported not having dental insurance.

Interpretation: Access to medical services among adults living in the United States is greater for persons aged ≥65 years, compared with those aged <65 years, presumably because of Medicare coverage. In contrast, use of dental services decreased, despite increased need for preventive and restorative dental care. Although Medicare covers many medical services for older adults, financial, personal, and physical barriers to both medical and dental care create racial, regional, and sociodemographic disparities in health status and use of health services in the United States.

Public Health Action: Continued surveillance of access to and use of health services among older adults (i.e., persons aged ≥65 years), as well as among persons aged 55–64 years, will help health-care providers target underserved groups, make Medicare coverage decisions, and develop public health programs to ensure equitable access to services and improve the health of older adults.

INTRODUCTION

Life expectancy has increased substantially during this century, and persons living in the United States who reach age 65 years have a high probability of living to age 80 years. Numerous health problems often accompany the last decades of life. However, adequate access to medical and dental care, including preventive services, can reduce premature morbidity and mortality, as well as preserve function and enhance overall quality of life (*1–3*). This report examines determinants of access to and use of health-care services among persons aged ≥55 years living in the United States.

The Institute of Medicine (IOM) defines appropriate health-care access as "the timely use of personal health services to achieve the best possible health outcomes" (*4*). Access is influenced by many factors, including facilitators of and barriers to care. Having a regular source of care — defined as a doctor or other health-care provider, or a specific site where care is provided — is one of the strongest determinants of access

to health care, independent of a person's age (*5*), potentially influencing both the likelihood of receiving care and the quality of that care.

IOM describes several types of barriers that can block access to health care, including financial and structural (i.e., physical) barriers. Lack of insurance is often a major financial barrier for persons aged <65 years. For persons aged ≥65 years, access to care improves when they become eligible for Medicare, which now covers many clinical preventive services (*6*). However, out-of-pocket health-care costs for Medicare beneficiaries lacking supplemental insurance can still pose a major barrier, causing some beneficiaries to delay or avoid services viewed as discretionary (e.g., filling prescriptions) (*7*). Medicare beneficiaries who opt to join a Medicare managed-care plan can avoid some of these expenses and also receive coverage for some preventive services not covered by traditional Medicare. However, at the end of each calendar year, managed-care plan administrators can renegotiate their charges and covered benefits or leave the Medicare program. Difficulties getting to a health-care provider or long waiting times for an appointment can be major structural obstacles for older adults. This report presents age-specific national and state estimates of the percentage of these factors, based on the 1995 National Health Interview Study (NHIS), the 1995–1997 Behavioral Risk Factor Surveillance System (BRFSS), and the 1996 Medicare Current Beneficiary Survey (MCBS).

Screening

Timely and appropriate access to preventive services is important with increasing age. *The Guide to Clinical Preventive Services* of the U.S. Preventive Services Task Force (USPSTF) recommends screening older adults for treatable chronic conditions that are the major causes of death for this population (e.g., cardiovascular disease and cancer) (*8*). Screening for hypertension is recommended for both children and adults. *Healthy People 2000* recommends increasing to ≥90% the proportion of adults who have had their blood pressure measured during the preceding 2 years and who can state whether their blood pressure was normal or high (objective 15.13) (*1*). Hypertension is most prevalent among older adults and is a leading risk factor for both heart disease and cerebrovascular disease. Data from multiple trials suggest that antihypertensive treatment of persons aged ≥60 years reduces mortality from all causes and reduces morbidity and mortality from stroke and coronary heart disease (CHD) (*9*).

Elevated serum cholesterol is also a major risk factor for CHD among men and women, but USPSTF deemed the epidemiologic evidence linking cholesterol and all-cause mortality among persons aged >65 years insufficient to indicate the need for cholesterol screening for all persons in this age group (*8*). Thus, USPSTF recommends screening only for persons aged >65 years with CHD risk factors. No direct evidence indicates that lowering cholesterol levels is beneficial for this population, but clinical trials are under way. Evidence indicates that cholesterol levels in older adults can be lowered by behavioral and pharmacologic interventions (*8*). The National Cholesterol Education Program Adult Treatment Panel II (NCEP II) revisited its guidelines in 1994 and now recommends routine measurement of nonfasting total cholesterol and high-density lipoprotein cholesterol (HDL-C) in all adults aged ≥20 years at least once every 5 years (*10*). A *Healthy People 2000* objective is to increase to ≥75% the proportion of adults who have had their blood cholesterol checked during the

preceding 5 years (objective 15.14) (*1*). Age-specific state estimates of the percentage of screening for hypertension and elevated serum cholesterol were calculated from the 1997 BRFSS for this report.

Morbidity and mortality associated with many types of cancers also increase with age. The significance of cancer prevention efforts have increased in recent years. For many cancers, risk factors are not amenable to change, so secondary prevention through screening and early detection is the main form of intervention. This report examines three cancers for which effective screening has been demonstrated to reduce mortality — breast, cervical, and colorectal cancers.

In 1999, breast cancer will be diagnosed in an estimated 175,000 women, and 43,300 will die from the disease (*11*). An estimated 12,800 women will be diagnosed with invasive cervical cancer, and 4,800 will die (*11*). Approximately 129,400 persons will be diagnosed with colorectal cancer, and 56,600 will die from the disease (*11*). Early detection and timely treatment of these diseases can alter their progression and reduce mortality. USPSTF recommends regular breast cancer screening for women aged 50–69 years, although many groups recommend initiating screening at age 40 years. Breast cancer screening guidelines do not extend to women aged ≥70 years because of the lack of clinical data on the effectiveness of screening this population. The American College of Physicians (ACP) recommends mammograms every 2 years for women aged 50–74 years. *Healthy People 2000* set a national objective of increasing to ≥60% the proportion of women aged ≥50 years who have received a clinical breast examination and a mammogram during the preceding 1–2 years (objective 16.11) (*1*). USPSTF recommends routine cervical cancer screening with Papanicolaou (Pap) testing for all women who are sexually active and have a cervix. There is insufficent clinical data to support recommending Pap tests for women aged >65 years whose previous screenings have been negative (*8*). This is supported by the *Healthy People 2000* objective to increase to ≥95% the proportion of women aged ≥18 years with a cervix who have ever received a Pap test and to ≥85% those who have received a Pap test during the preceding 1–3 years (objective 16.12) (*1*).

To reduce mortality from colorectal cancer, one or more of the following tests are recommended for persons aged ≥50 years: a) annual fecal occult blood testing (FOBT), b) flexible sigmoidoscopy, or c) double-contrast barium enema (*8,12,13*). A *Healthy People 2000* objective recommends increasing to ≥50% the proportion of persons aged ≥50 years who have received FOBT during the preceding 1–2 years and to ≥40% those who have ever received proctosigmoidoscopy (objective 16.13) (*1*). This report presents 1997 state-specific BRFSS data on self-reported breast and cervical cancer screening among women aged ≥55 years and colorectal cancer screening among men and women aged ≥55 years.

As noted, Medicare covers several clinical preventive services, including influenza and pneumococcal vaccination, mammography, pap tests and pelvic exams, and colorectal cancer screening (including screening FOBT, flexible sigmoidoscopy, and colonoscopy). However, Medicare coverage for most preventive services was increased or initiated on January 1, 1998, by the Medicare provisions of the Balanced Budget Act of 1997. The data in this report were collected during 1997 (except 1995 NHIS data and 1995–1997 dental services data). In 1997, Medicare covered biennial screening mammography for women aged ≥65 years and screening pap tests every 3 years, subject to the deductible for Medicare Part B (which covers physician

services); influenza and pneumoccal vaccinations were covered with no deductible. Screening for colorectal cancer and elevated serum cholesterol were not covered benefits in 1997.

Vaccination

Appropriate and timely vaccination can substantially reduce the impact of vaccine-preventable infectious disease. In 1997, a total of 90% of U.S. deaths attributed to pneumonia and influenza occurred among persons aged ≥65 years, making these illnesses the fifth leading cause of death for this age group (*14*). During influenza epidemics, persons aged ≥65 years face increased risk for influenza-associated hospitalizations (range: from 200 to >1,000/100,000 population during epidemics from 1972 through 1981) and deaths (range: from 25 to >150/100,000 during 19 epidemics from 1972 through 1995) (*15*). Persons aged ≥65 years are also at increased risk for invasive pneumococcal disease, including bacteremia and meningitis, with an estimated annual incidence of 50–83 cases/100,000 population compared with 15–30 cases/100,000 among persons of all ages (*16*).

To decrease morbidity and mortality from influenza and pneumococcal disease, annual influenza vaccinations and one dose of pneumococcal polysaccharide vaccine are recommended for persons aged ≥65 years (*8,15,16*). Medicare has reimbursed one lifetime pneumococcal vaccination, including the cost of the vaccine since 1981 and the cost of administration since 1992. Since May 1, 1993, Medicare has reimbursed health-care providers for the cost of influenza vaccine and its administration. Both pneumococcal and influenza vaccination are covered under Medicare Part B, with no deductible. A *Healthy People 2000* objective is to increase influenza and pneumococcal vaccination levels to ≥60% among persons at high risk for complications, including those aged ≥65 years (objective 20.11) (*1*). This report analyzes influenza and pneumococcal vaccination rates from the 1997 BRFSS by age and state.

Dental Services

Regular dental care is also important for older adults, who are at higher risk for numerous oral conditions and diseases because of age-related physiologic changes, use of various medications, and underlying chronic diseases (*17*). Oral diseases and conditions can impact quality of life among older adults (*18–20*). Regular dental visits allow dental health professionals to provide preventive services, early diagnosis, and treatment. Although limited empirical evidence supports the universal need for annual dental examinations, and because the appropriate frequency of dental visits is usually left to clinicians' judgment (*8*), older adults who do not receive regular care can be at increased risk for serious oral diseases. Thus, annual oral examinations are recommended for all adults, including those aged ≥55 years (*21*). The American Cancer Society (ACS) recommends annual oral examinations for persons aged ≥40 years (*22*), and USPSTF recommends regular dental visits for persons aged ≥65 years (*8*).

Recognizing the importance of periodic dental visits, *Healthy People 2000* established a national objective of increasing to approximately 70% the proportion of persons aged ≥35 years who receive oral health care each year (objective 13.14) (*1*). Target levels for population subgroups with historically low rates of dental service use

are slightly lower — 50% for edentate persons (i.e., those with no natural teeth) and 60% for persons aged ≥65 years.

Dental insurance coverage is a strong correlate of dental care use, particularly among older adults (*23*). Because dental insurance typically is provided as an employee benefit, retired persons are less likely to have dental insurance. With few exceptions, Medicare does not cover dental care services (*24*), and few states provide adult dental coverage under their Medicaid programs (*25*). This report analyzes the percentage of persons aged ≥55 years who reported a dental visit and dental insurance coverage during the 12 months preceding participation in the 1995–1997 BRFSS, by age and state.

METHODS

All tables in this report were created using data from the 1995 NHIS, the 1995–1997 BRFSS, or the 1996 MCBS. All three data systems rely on self-reports, which can over- or underestimate the percentage of certain behaviors. The NHIS is an ongoing, annual, cross-sectional household survey of the U.S. resident civilian, noninstitutionalized population. NHIS data are obtained through personal interviews with household members. Information on all members of the household is collected, and proxy responses are allowed. The 1995 NHIS consisted of two parts: a set of basic health and demographic items and questions concerning current health topics. The 1995 sample design included the oversampling of both black and Hispanic persons to improve the stability of estimates for these groups (*26*). For this report, percentage estimates were stratified by age (55–64 years, 65–74 years, and ≥75 years), race/ethnicity,* sex, education (<12 years of school, 12 years, or >12 years), and region.†

SAS software (i.e., an integrated system for data access, management, analysis, and presentation) was used to calculate percentage estimates. Software for Survey Data Analysis (SUDAAN) (Version 7.0; Research Triangle Institute, Research Triangle Park, North Carolina) was used to calculate 95% confidence intervals (CIs).

The BRFSS is an ongoing, state-based, random-digit–dialed telephone survey of U.S. resident civilian, noninstitutionalized persons aged ≥18 years. This survey collects self-reported information regarding behaviors related to health status (*27*). The BRFSS excludes households without telephones, but only approximately 2.5% of older adults do not have a phone. Institutionalized persons, who are also excluded, likely account for approximately 5% of persons aged ≥65 years (*28*). In 1997, a total of 25,000 persons aged ≥65 years from 52 reporting areas (i.e., the 50 states, the District of Columbia, and Puerto Rico) participated in the BRFSS. Data from Puerto Rico were not included in these analyses. An Oral Health Module was added in 1995, and 46 states administered this module at least once during 1995–1997.

*Race/ethnicity data are presented only for non-Hispanic whites, non-Hispanic blacks, and Hispanics because sample sizes for other racial/ethnic groups were too small for meaningful analysis.

†Northeast=Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont; Midwest=Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin; South=Alabama, Arkansas, Delaware, District of Columbia, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, and West Virginia; and West=Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming.

For this report, BRFSS data were aggregated to create a yearly sample for each state and stratified by age group (55–64 years, 65–74 years, ≥65 years, and ≥75 years). Missing data or data coded as "don't know" or "refused" were excluded from analyses. The data were then weighted to both the respondent's probability of selection and the distribution of each state's population by age, sex, and race/ethnicity, according to current census or intercensal estimates (*29,30*). SUDAAN statistical software was used to calculate state-specific percentages and 95% CIs. Median percentage estimates were based on combined state-specific percentage estimates from the 50 states and the District of Columbia. To increase the precision of estimates from the BRFSS Oral Health Module, data from multiple years (1995–1997) were merged for states that had administered the module at least once during this period.

The MCBS is a continuous, multipurpose, complex survey of noninstitutionalized and institutionalized Medicare beneficiaries, including disabled persons. It is designed to determine expenditures and sources of payment for all services used by Medicare beneficiaries, as well as the beneficiaries' health status and functioning, income, assets, living arrangements, family support, and access to medical care. For this report, MCBS data were summarized from the 1996 Access to Care File, a public-use data set of annual use and expenditure summaries from Medicare files, along with survey data about insurance coverage, health status and functioning, access to care, information needs, satisfaction with care, and income (*31*). The sampling frame comes from Medicare enrollment files of the Health Care Financing Administration (HCFA), with oversampling of disabled persons aged <65 years and all persons aged ≥85 years. A new sample is added each year to include new Medicare beneficiaries and to replenish sample groups depleted by refusals and death. Personal interviews are conducted with beneficiaries or their proxies three times a year where the respondents reside. Sample members are followed for 4 years. This report analyzes only noninstitutionalized respondents aged ≥65 years.

Two MCBS questions were designed to assess respondents' access to health care: "Have you had any trouble getting health care that you wanted or needed?" and "Were any medicines prescribed for you that you did not get [during the current year]?" Respondents who answered yes to the first question were classified as having trouble getting health care. Those who answered yes to the second question were classified as not getting prescribed medications. The following queries examined potential barriers to receipt of health care:

- "Have you delayed seeking medical care because you were worried about the cost?" Respondents answering yes were classified as having delayed care because of cost.
- "Please indicate how satisfied you have been with the ease and convenience in getting to a doctor from where you live." Respondents who indicated that they were either dissatisfied or very dissatisfied were classified as not satisfied with how easily they could get to a doctor.
- "Is there a particular medical person or clinic you usually go to when you are sick or for advice about your health?" Respondents who answered no were classified as having no particular source of health care.

- "Is there a particular doctor you usually see at this place?" Respondents who answered yes to the previous question were asked this follow-up question. Those who answered no to this question were classified as having no particular doctor at their usual health-care site.

SUDAAN statistical software was used to calculate percentage estimates and standard errors, adjusting for the complex structure of the survey. The estimates were stratified by combinations of race (black or white) and sex, by age groups (65–74 years, 75–84 years, and ≥85 years), and by income levels (>$25,000, ≤$25,000, ≤$15,000, and ≤$10,000), which are cumulative rather than mutually exclusive. The estimates were age-adjusted within the race/sex strata, sex-adjusted within the age strata, and age- and sex-adjusted within the income strata to the 1970 U.S. standard population.

RESULTS

Access to and Use of Health-Care Services

Most adults aged ≥55 years reported having a regular source of medical care during the preceding year (Table 1). However, when the responses were stratified by age, persons aged <65 years were consistently less likely to have a regular source of care than persons aged ≥65 years. The proportion of respondents who had a regular source of care also increased with education level. Hispanics aged <65 years were less likely to have a regular source of care, but data from respondents aged ≥65 years demonstrated no consistent differences across racial and ethnic groups. Men were slightly but consistently less likely to report a regular source of care than women.

Persons with a regular source of medical care are more likely to receive basic medical services (e.g., a routine checkup), which presents the opportunity for delivery of preventive services (*5*). Most persons aged ≥55 years reported having a routine checkup during the preceding 2 years, and use of this preventive service increased with increasing age (Table 2). The median value was 77.3% for persons aged 55–64 years, 84.6% for persons aged 65–74 years, and 87.8% for those aged ≥75 years. The median of all responses was 86.1%. Across all age groups, the lowest percentage was among persons aged 55–64 years in California (66.2%), and the highest was among persons aged ≥75 years in Louisiana (94.7%).

The NHIS asked respondents whether they had delayed seeking medical care during the preceding 12 months because of concern regarding the cost. In general, few respondents said yes (Table 3). Among persons aged <65 years, ≥10% of Hispanics,* non-Hispanic blacks, and persons with less than a high school education indicated that they had delayed care because of cost during the preceding year. The rate decreased for respondents aged ≥65 years; for those aged 65–74 years, the rate was >5% for Hispanics and persons with less than a high school education. Persons aged ≥75 years reported that they rarely encountered this problem. Respondents to the BRFSS were also asked whether they had failed to receive medical care during the preceding year because of cost (Table 4). The percentage of persons who reported that cost was not a barrier increased with advancing age: the median value was 92.3% for

*Persons of Hispanic origin can be of any race.

TABLE 1. Percentage of adults aged ≥55 years who reported having a regular source(s) of medical care during the preceding year, by selected sociodemographic characteristics — United States, National Health Interview Survey, 1995*†

	Age group (yrs)					
	55–64		65–74		≥75	
Characteristics	%	(95% CI§)	%	(95% CI)	%	(95% CI)
Race/Ethnicity¶						
White, non-Hispanic	92.4	(±0.8)	95.1	(±0.6)	95.7	(±0.7)
Black, non-Hispanic	93.4	(±1.9)	93.3	(±2.1)	96.7	(±2.1)
Hispanic**	85.9	(±2.7)	93.7	(±2.1)	96.1	(±2.4)
Sex						
Male	90.4	(±1.0)	94.0	(±0.9)	95.4	(±1.1)
Female	93.4	(±0.8)	95.5	(±0.7)	96.1	(±0.8)
Education (yrs)						
<12	89.2	(±1.6)	93.6	(±1.1)	95.4	(±0.9)
12	92.1	(±1.0)	95.5	(±0.9)	95.9	(±1.1)
>12	93.7	(±1.1)	95.2	(±1.1)	96.8	(±1.1)
Region††						
Northeast	93.5	(±1.4)	95.2	(±1.2)	95.4	(±1.7)
Midwest	92.1	(±1.5)	94.6	(±1.3)	95.9	(±1.1)
South	91.4	(±1.2)	94.8	(±1.0)	96.1	(±1.0)
West	91.0	(±1.6)	94.6	(±1.4)	95.9	(±1.4)
Total	**92.1**	**(±0.7)**	**94.9**	**(±0.6)**	**95.8**	**(±0.7)**

*n = 17,891.
†Source(s) of care are defined as a doctor or other health-care provider, or a specific site where medical care was provided. Persons citing multiple sources might or might not have visited one source more than another.
§Confidence interval. CIs were calculated by multiplying the standard error by 1.96.
¶Race/ethnicity data are presented only for non-Hispanic whites, non-Hispanic blacks, and Hispanics because sample sizes for other racial/ethnic groups were too small for meaningful analysis.
**Persons of Hispanic origin can be of any race.
††Northeast=Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont; Midwest=Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin; South=Alabama, Arkansas, Delaware, District of Columbia, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, and West Virginia; and West=Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming.

persons aged 55–64 years, 96.2% for persons aged 65–74 years, and 97.0% for those aged ≥75 years. The highest percentage of respondents who reported that cost was not a barrier was among persons aged ≥75 years in Nevada (99.8.%), and the lowest was among persons aged ≥75 years in Arizona (71.3%).

The MCBS also includes data on noninstitutionalized Medicare beneficiaries aged ≥65 years who reported difficulties in accessing medical care (Table 5). Fewer than 5% of MCBS respondents reported problems receiving care or prescribed medications.

TABLE 2. Percentage of adults aged ≥55 years who reported having a routine checkup during the preceding 2 years, by state and age group — United States, Behavioral Risk Factor Surveillance System, 1997*†

	Age group (yrs)							
	55–64		65–74		≥65		≥75	
State	%	(95% CI§)	%	(95% CI)	%	(95% CI)	%	(95% CI)
Alabama	77.9	(±5.4)	88.1	(±4.2)	87.0	(±3.6)	85.3	(± 6.5)
Alaska	74.5	(±9.7)	83.7	(±9.1)	82.0	(±8.2)	76.6	(±18.2)
Arizona	83.3	(±5.6)	88.3	(±5.3)	87.9	(±4.4)	87.2	(± 7.2)
Arkansas	74.5	(±6.2)	79.9	(±5.9)	81.7	(±4.2)	84.0	(± 5.7)
California	66.2	(±5.0)	76.3	(±4.6)	78.1	(±3.5)	80.7	(± 5.2)
Colorado	72.6	(±7.3)	81.1	(±6.1)	81.1	(±4.7)	81.1	(± 7.1)
Connecticut	75.6	(±8.4)	86.1	(±4.6)	88.6	(±3.3)	92.3	(± 4.3)
Delaware	82.1	(±4.6)	85.1	(±4.0)	86.9	(±3.1)	90.0	(± 4.6)
District of Columbia	83.1	(±6.1)	83.2	(±7.5)	86.5	(±5.2)	91.8	(± 6.2)
Florida	79.2	(±4.6)	90.6	(±2.7)	91.8	(±1.8)	93.3	(± 2.4)
Georgia	72.9	(±6.2)	91.0	(±3.9)	90.5	(±3.3)	89.7	(± 5.3)
Hawaii	83.0	(±5.6)	86.8	(±5.0)	87.4	(±3.9)	88.3	(± 6.5)
Idaho	75.8	(±4.9)	78.3	(±4.0)	78.8	(±3.0)	79.5	(± 4.6)
Illinois	80.2	(±4.9)	87.2	(±4.3)	87.3	(±3.2)	87.6	(± 4.9)
Indiana	77.3	(±5.3)	82.1	(±5.3)	81.9	(±4.3)	81.5	(± 7.4)
Iowa	72.4	(±5.0)	75.2	(±4.6)	77.6	(±3.2)	80.6	(± 4.1)
Kansas	84.1	(±5.0)	88.1	(±4.5)	89.0	(±3.3)	90.4	(± 4.7)
Kentucky	74.3	(±4.6)	85.7	(±3.4)	86.9	(±2.5)	88.8	(± 3.4)
Louisiana	74.3	(±7.0)	87.0	(±5.3)	89.7	(±3.7)	94.7	(± 3.8)
Maine	77.3	(±6.6)	86.4	(±5.3)	89.0	(±3.5)	92.6	(± 4.8)
Maryland	83.3	(±3.9)	89.8	(±3.5)	91.2	(±2.6)	93.8	(± 3.1)
Massachusetts	90.0	(±5.1)	90.0	(±4.9)	89.8	(±3.8)	89.5	(± 6.0)
Michigan	81.8	(±4.9)	86.8	(±5.0)	85.9	(±3.7)	84.6	(± 5.7)
Minnesota	73.8	(±4.2)	78.8	(±4.0)	80.2	(±2.9)	81.9	(± 3.8)
Mississippi	80.0	(±6.1)	84.4	(±5.6)	86.3	(±4.0)	89.5	(± 5.4)
Missouri	70.9	(±6.5)	88.3	(±4.9)	90.0	(±3.5)	92.7	(± 4.2)
Montana	73.9	(±6.3)	71.1	(±6.8)	76.8	(±4.8)	84.6	(± 5.5)
Nebraska	76.5	(±5.5)	73.5	(±5.6)	77.6	(±3.7)	82.6	(± 4.6)
Nevada	79.3	(±6.9)	78.3	(±8.7)	79.6	(±7.4)	82.8	(±14.3)
New Hampshire	77.4	(±7.3)	83.1	(±6.1)	85.2	(±4.3)	88.4	(± 6.0)
New Jersey	81.9	(±5.3)	89.2	(±4.0)	89.4	(±3.0)	89.8	(± 4.4)
New Mexico	72.3	(±6.8)	79.5	(±5.7)	80.1	(±4.3)	81.1	(± 7.0)
New York	79.6	(±4.7)	91.5	(±3.1)	91.5	(±2.4)	91.4	(± 3.6)
North Carolina	81.4	(±4.1)	84.7	(±3.7)	85.4	(±2.9)	86.8	(± 4.3)
North Dakota	77.2	(±6.5)	82.2	(±5.5)	83.6	(±3.8)	85.4	(± 5.1)
Ohio	80.3	(±5.3)	87.7	(±3.9)	89.3	(±2.7)	92.5	(± 3.3)
Oklahoma	77.9	(±6.0)	80.5	(±4.0)	82.4	(±3.2)	87.9	(± 5.1)
Oregon	82.2	(±4.0)	80.5	(±4.5)	81.3	(±3.3)	82.6	(± 4.8)
Pennsylvania	80.6	(±4.1)	89.8	(±3.3)	90.5	(±2.4)	91.7	(± 3.5)
Rhode Island	86.2	(±5.2)	90.2	(±4.2)	91.4	(±3.1)	93.3	(± 4.4)
South Carolina	70.5	(±6.0)	88.1	(±4.0)	88.7	(±3.0)	89.9	(± 4.8)
South Dakota	72.6	(±6.6)	83.7	(±5.0)	84.0	(±3.5)	84.3	(± 4.9)
Tennessee	81.7	(±4.5)	88.2	(±3.9)	88.2	(±2.9)	88.2	(± 4.2)
Texas	78.6	(±5.6)	85.6	(±5.3)	85.8	(±4.0)	86.2	(± 5.8)
Utah	71.3	(±6.9)	81.7	(±6.2)	84.6	(±4.2)	88.3	(± 5.5)
Vermont	78.4	(±4.6)	76.9	(±5.0)	82.9	(±3.4)	91.5	(± 3.5)
Virginia	76.9	(±6.0)	86.2	(±4.7)	86.6	(±3.5)	87.3	(± 5.3)
Washington	71.7	(±5.1)	79.5	(±4.7)	78.2	(±3.7)	76.4	(± 6.0)
West Virginia	76.5	(±5.1)	87.7	(±3.9)	88.1	(±3.0)	88.9	(± 4.9)
Wisconsin	69.2	(±6.7)	79.6	(±6.5)	80.3	(±4.8)	81.6	(± 6.6)
Wyoming	70.2	(±5.9)	73.7	(±6.3)	74.4	(±4.8)	75.5	(± 7.1)
Median	**77.3%**		**84.6%**		**86.1%**		**87.8%**	
Range	**(66.2%–90.0%)**		**(71.1%–91.5%)**		**(74.4%–91.8%)**		**(75.5%–94.7%)**	

*n = 41,308.

†Respondents were asked, "About how long has it been since you last visited a doctor for a routine checkup?" Persons who reported having a routine checkup during the preceding 2 years are reported.

§Confidence interval. CIs were calculated by multiplying the standard error by 1.96.

TABLE 3. Percentage of adults aged ≥55 years who reported delaying medical care during the preceding year because of cost, by selected sociodemographic characteristics — United States, National Health Interview Survey, 1995*†

Characteristics	Age group (yrs) 55–64 %	55–64 (95% CI§)	65–74 %	65–74 (95% CI)	≥75 %	≥75 (95% CI)
Race/Ethnicity¶						
White, non-Hispanic	7.5	(±0.8)	3.6	(±0.6)	2.4	(±0.5)
Black, non-Hispanic	10.0	(±2.2)	4.5	(±1.6)	2.9	(±1.8)***
Hispanic**	11.0	(±2.4)	5.4	(±1.9)	3.9	(±2.3)
Sex						
Male	6.5	(±0.9)	3.2	(±0.6)	1.8	(±0.7)
Female	9.5	(±1.0)	4.3	(±0.7)	2.8	(±0.6)
Education (yrs)						
<12	13.2	(±1.7)	5.1	(±1.0)	3.4	(±0.8)
12	7.7	(±1.1)	3.3	(±0.7)	1.9	(±0.7)
>12	5.4	(±0.9)	3.0	(±0.8)	1.4	(±0.8)
Region††						
Northeast	6.3	(±1.6)	2.7	(±0.8)	1.9	(±0.8)
Midwest	8.0	(±1.4)	4.5	(±1.3)	1.8	(±0.7)
South	9.7	(±1.2)	4.2	(±0.8)	2.9	(±0.9)
West	7.3	(±1.4)	3.5	(±1.0)	3.0	(±1.3)
Total	**8.1**	**(±0.7)**	**3.8**	**(±0.5)**	**2.4**	**(±0.5)**

*n = 19,980.
†Respondents were asked, "During the past 12 months, have you delayed medical care because of worry about the cost?"
§Confidence interval. CIs were calculated by multiplying the standard error by 1.96.
¶Race/ethnicity data are presented only for non-Hispanic whites, non-Hispanic blacks, and Hispanics because sample sizes for other racial/ethnic groups were too small for meaningful analysis.
**Persons of Hispanic origin can be of any race.
††Northeast=Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island and Vermont; Midwest=Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota and Wisconsin; South=Alabama, Arkansas, Delaware, District of Columbia, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia and West Virginia; and West=Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington and Wyoming.
***Estimate might be unstable (relative standard error >0.3) because of small sample size.

When stratified by sex and race, the percentage of persons who reported difficulties receiving care ranged from 2.1% (white males) to 4.1% (black females). The percentage of persons who did not receive prescribed medications ranged from 2% (white males) to 4.7% (black females). When stratified by income, the proportion of persons who reported difficulties receiving care ranged from 2% for those in the highest income group (>$25,000) to 4% for those with incomes ≤$10,000. In the high-income category, 1.7% did not receive prescribed medications, compared with 3.3% in the low-income group. Overall, respondents were more likely to report specific barriers to

TABLE 4. Percentage of adults aged ≥55 years who reported that cost was not a barrier to obtaining medical care during the preceding year, by state and age group — United States, Behavioral Risk Factor Surveillance System, 1997*†

State	Age group (yrs)							
	55–64		65–74		≥65		≥75	
	%	(95% CI§)	%	(95% CI)	%	(95% CI)	%	(95% CI)
Alabama	89.4	(±3.8)	94.0	(±3.1)	95.2	(±2.1)	97.0	(± 2.3)
Alaska	91.7	(±4.7)	94.2	(±4.8)	94.4	(±4.3)	94.9	(±10.2)
Arizona	73.9	(±8.4)	82.9	(±5.1)	78.1	(±4.5)	71.3	(± 8.6)
Arkansas	82.6	(±5.2)	88.8	(±4.4)	87.9	(±3.7)	86.8	(± 6.3)
California	91.7	(±2.8)	98.7	(±1.4)	98.8	(±0.9)	99.0	(± 1.1)
Colorado	94.6	(±3.4)	98.1	(±1.9)	98.4	(±1.5)	98.8	(± 2.4)
Connecticut	95.9	(±2.7)	98.7	(±1.4)	98.1	(±1.2)	97.2	(± 2.3)
Delaware	91.7	(±3.5)	96.8	(±1.8)	97.1	(±1.3)	97.8	(± 1.6)
District of Columbia	87.8	(±5.2)	93.3	(±5.1)	94.3	(±3.5)	95.8	(± 3.8)
Florida	87.1	(±4.0)	96.6	(±1.6)	97.2	(±1.1)	98.0	(± 1.3)
Georgia	94.2	(±2.9)	98.9	(±1.1)	97.6	(±1.6)	95.0	(± 4.5)
Hawaii	94.6	(±3.3)	97.2	(±2.1)	97.1	(±1.8)	97.0	(± 3.4)
Idaho	93.1	(±2.1)	96.4	(±1.7)	96.6	(±1.2)	97.0	(± 1.6)
Illinois	94.0	(±2.7)	95.3	(±3.4)	96.0	(±2.3)	97.2	(± 2.3)
Indiana	93.4	(±3.3)	98.1	(±2.0)	97.8	(±1.5)	97.3	(± 2.4)
Iowa	94.7	(±2.2)	97.0	(±1.9)	97.6	(±1.2)	98.2	(± 1.2)
Kansas	90.4	(±4.1)	96.2	(±2.6)	97.3	(±1.6)	98.9	(± 1.2)
Kentucky	88.0	(±3.0)	95.3	(±2.1)	95.1	(±1.7)	94.7	(± 2.8)
Louisiana	86.9	(±5.3)	95.9	(±3.4)	95.4	(±3.1)	94.6	(± 6.2)
Maine	91.4	(±4.1)	94.7	(±3.4)	94.5	(±2.5)	94.1	(± 3.9)
Maryland	93.8	(±2.3)	96.2	(±2.1)	96.8	(±1.5)	98.1	(± 2.1)
Massachusetts	94.5	(±4.4)	95.9	(±3.8)	97.1	(±2.4)	98.9	(± 1.5)
Michigan	94.3	(±2.8)	97.0	(±2.2)	97.1	(±1.6)	97.4	(± 2.2)
Minnesota	94.7	(±1.9)	96.4	(±1.7)	95.9	(±1.3)	95.1	(± 2.1)
Mississippi	86.2	(±4.9)	93.4	(±3.5)	93.5	(±2.7)	93.6	(± 4.5)
Missouri	90.2	(±4.0)	96.7	(±3.0)	97.0	(±2.1)	97.6	(± 2.7)
Montana	92.3	(±4.0)	93.3	(±3.8)	93.7	(±2.7)	94.3	(± 3.6)
Nebraska	93.1	(±3.0)	97.0	(±1.7)	97.5	(±1.2)	98.0	(± 1.6)
Nevada	89.2	(±7.2)	97.4	(±2.3)	98.0	(±1.7)	99.8	(± 0.4)
New Hampshire	93.6	(±3.8)	94.3	(±3.7)	95.2	(±2.6)	96.6	(± 3.1)
New Jersey	90.6	(±3.7)	94.1	(±2.8)	94.6	(±2.0)	95.4	(± 2.8)
New Mexico	88.4	(±5.1)	97.1	(±2.3)	96.0	(±2.2)	94.1	(± 4.4)
New York	91.6	(±3.4)	93.8	(±2.9)	94.9	(±2.0)	96.6	(± 2.4)
North Carolina	89.3	(±3.2)	92.4	(±2.6)	93.4	(±1.9)	95.4	(± 2.4)
North Dakota	94.3	(±3.1)	97.0	(±2.1)	96.8	(±1.7)	96.6	(± 2.8)
Ohio	92.1	(±3.3)	97.2	(±1.6)	96.9	(±1.4)	96.4	(± 2.9)
Oklahoma	91.6	(±4.1)	99.1	(±1.0)	99.0	(±0.9)	98.5	(± 2.1)
Oregon	92.6	(±2.8)	97.0	(±1.8)	97.6	(±1.2)	98.6	(± 1.5)
Pennsylvania	92.1	(±2.7)	98.2	(±1.1)	98.0	(±1.0)	97.6	(± 1.9)
Rhode Island	94.4	(±3.5)	98.1	(±1.8)	97.3	(±1.6)	96.0	(± 2.9)
South Carolina	93.8	(±3.4)	96.0	(±2.4)	96.2	(±1.9)	96.7	(± 2.9)
South Dakota	94.1	(±3.4)	95.6	(±2.5)	95.4	(±1.8)	95.1	(± 2.6)
Tennessee	91.1	(±2.8)	94.8	(±2.7)	95.9	(±1.8)	97.6	(± 1.8)
Texas	90.5	(±3.6)	95.3	(±3.0)	95.9	(±2.1)	96.8	(± 2.7)
Utah	93.2	(±4.2)	93.4	(±4.0)	95.4	(±2.4)	98.0	(± 2.0)
Vermont	93.7	(±2.6)	97.0	(±1.8)	96.5	(±1.6)	95.7	(± 2.8)
Virginia	92.3	(±2.5)	95.8	(±2.2)	95.6	(±2.0)	95.2	(± 4.0)
Washington	94.3	(±2.5)	96.4	(±2.3)	96.9	(±1.6)	97.6	(± 2.3)
West Virginia	85.6	(±4.1)	95.0	(±2.4)	95.6	(±1.8)	96.6	(± 2.4)
Wisconsin	95.8	(±3.4)	98.0	(±1.6)	98.4	(±1.1)	99.0	(± 1.4)
Wyoming	92.5	(±3.0)	96.0	(±3.0)	97.2	(±2.0)	99.2	(± 1.1)
Median	**92.3%**		**96.2%**		**96.6%**		**97.0%**	
Range	**(73.7%–95.9%)**		**(82.9%–99.1%)**		**(73.6%–99.0%)**		**(71.3%–99.8%)**	

*n = 42,692.

†Respondents were asked, "Was there any time in the last 12 months when you needed to see a doctor but could not because of the cost?" Persons who answered no are reported.

§Confidence interval. CIs were calculated by multiplying the standard error by 1.96.

TABLE 5. Percentage of Medicare beneficiaries aged ≥65 years who reported difficulty accessing medical care, by selected sociodemographic characteristics — United States, Medicare Current Beneficiary Study (MCBS), 1996*†

Characteristics	Had difficulty getting medical care		Did not get prescribed medications		Delayed care because of cost		Not satisfied with ease of getting to doctor		No specific source for care		No specific doctor seen at specific site	
	%	(95% CI§)	%	(95% CI)	%	(95% CI)	%	(95% CI)	%	(95% CI)	%	(95% CI)
Sex												
Male	2.2	(±0.5)	2.1	(±0.5)	5.3	(±0.8)	4.7	(±0.8)	7.7	(±0.9)	12.3	(±1.1)
Female	2.5	(±0.4)	2.8	(±0.5)	6.9	(±0.7)	5.2	(±0.7)	6.3	(±0.8)	8.8	(±0.8)
Race/Sex¶												
White male	2.1	(±0.5)	2.0	(±0.9)	4.7	(±0.7)	4.7	(±0.9)	7.4	(±1.0)	11.3	(±1.2)
White female	2.4	(±0.4)	2.7	(±0.6)	6.5	(±0.7)	4.8	(±0.7)	6.0	(±0.8)	8.0	(±0.9)
Black male	2.8	(±1.7)**	2.4	(±1.5)**	9.3	(±2.8)	3.7	(±0.9)	11.1	(±3.7)	23.6	(±5.5)
Black female	4.1	(±1.6)	4.7	(±2.5)	11.1	(±3.3)	8.3	(±2.5)	8.7	(±3.1)	15.6	(±3.6)
Age (yrs)												
65–74	2.6	(±0.5)	2.8	(±0.5)	6.8	(±0.8)	4.4	(±0.8)	7.7	(±0.8)	11.6	(±1.0)
75–84	1.9	(±0.4)	2.1	(±0.4)	5.0	(±0.7)	5.8	(±0.9)	6.1	(±0.9)	9.1	(±1.0)
≥85	2.3	(±0.7)	1.0	(±0.4)	3.7	(±1.0)	6.8	(±1.4)	5.1	(±1.2)	7.7	(±1.5)
Income												
>$25,000	2.0	(±0.4)	1.7	(±0.5)	2.3	(±0.6)	2.9	(±0.6)	5.2	(±0.8)	7.5	(±1.1)
≤$25,000	2.6	(±0.4)	2.9	(±0.6)	8.5	(±1.0)	6.0	(±0.9)	8.4	(±0.7)	13.1	(±1.0)
≤$15,000	3.3	(±0.7)	3.0	(±0.7)	10.3	(±1.3)	6.8	(±1.3)	9.8	(±1.1)	15.8	(±1.6)
≤$10,000	4.0	(±1.0)	3.3	(±0.9)	11.2	(±1.6)	7.3	(±1.7)	11.0	(±1.6)	18.9	(±2.3)

*n = 17,794.
†Based on noninstitutionalized U.S. residents responding to the 1996 MCBS. Results are age-adjusted within race/sex strata, sex-adjusted within age strata, and age- and sex-adjusted within income strata to the 1970 U.S. standard population.
§Confidence interval. CIs were calculated by multiplying the standard error by 1.96.
¶Race/ethnicity data are presented only for non-Hispanic whites and non-Hispanic blacks because sample sizes for other racial/ethnic groups were too small for meaningful analysis.
**Estimates might be unstable (relative standard error >0.3) because of small sample size.

care (e.g., lack of ease getting to the doctor, cost, or no specific source of care). Among sex and race groups, 8.3% of black females reported dissatisfaction with the ease of getting to the doctor, compared with 3.7% of black males. Of the three age groups (i.e., 65–74 years, 75–84 years, and ≥85 years), persons aged ≥85 years were the most likely to report difficulties getting to the doctor (6.8%) as were those in the lowest income group (7.3%).

Despite the minimal percentage of respondents who reported difficulties receiving care or who did not fill prescriptions, a larger percentage reported delaying care because of cost, although percentages varied across groups. Approximately twice as many black males reported delaying care because of cost than did white males (9.3% versus 4.7%), and the same was true when black females were compared with white females (11.1% versus 6.5%). Persons aged 65–74 years were approximately twice as likely as persons aged ≥85 years to have delayed care (6.8% versus 3.7%), and those in the lowest income stratum were approximately five times as likely as those in the highest income stratum to report delaying care (11.2% versus 2.3%). Black males and females also were more likely than white males and females to report not having a regular source of medical care (11.1% and 8.7% versus 7.4% and 6.0%). Persons with incomes ≤$10,000 were approximately twice as likely as persons earning >$25,000 to have no regular source of care (11.0% versus 5.2%). Respondents who reported having a regular site of care were asked whether they saw a particular doctor at that site; 23.6% of black males and 15.6% of black females reported that they did not, compared with 11.3% of white males and 8% of white females. A higher percentage of persons aged 65–74 years reported not seeing a particular doctor (11.6%), compared with persons aged ≥85 years (7.7%). Of persons earning >$25,000, a total of 7.5% reported having no regular doctor, compared with 18.9% of those with an income ≤$10,000.

Screening

Data from the BRFSS were used to analyze how many adults aged ≥55 years received blood pressure checks during the preceding 2 years. The median estimates were 95.1% among persons aged 55–64 years, 96.7% among persons aged 65–74 years, and 97.7% among persons aged ≥75 years (Table 6). Values ranged from 89% for persons aged 55–64 years in Wisconsin to 100% for persons aged ≥75 years in Georgia and the District of Columbia. The median estimates of the percentage of blood cholesterol checks during the preceding 5 years (Table 7) ranged from 84.9% among persons aged 55–64 years to 88.3% among persons aged 65–74 years. Values ranged from 68.3% among persons aged ≥75 years in Kansas to 94.9% among persons aged 55–64 years in Michigan.

For breast cancer screening, the median percentages of women who reported having a mammogram during the preceding 2 years were 77.0% among those aged 55–64 years, 75.4% among those aged 65–74 years, and 61.4% among those aged ≥75 years (Table 8). State-specific percentages ranged from 57.3% (Arkansas) to 90.7% (Alaska) among women aged 55–64 years; from 55.7% (Arkansas) to 87.4% (Rhode Island) among women aged 65–74 years; and from 37.9% (Indiana) to 75.3% (District of Columbia) among women aged ≥75 years. For most states, the lowest percentage was among women aged ≥75 years.

TABLE 6. Percentage of adults aged ≥55 years who reported receiving a blood pressure check during the preceding 2 years, by state and age group — United States, Behavioral Risk Factor Surveillance System, 1997*†

State	Age groups (yrs)							
	55–64		65–74		≥65		≥75	
	%	(95% CI§)	%	(95% CI)	%	(95% CI)	%	(95% CI)
Alabama	97.3	(±2.1)	99.0	(±1.0)	98.2	(±1.3)	96.9	(±3.0)
Alaska	97.6	(±1.8)	96.1	(±3.8)	96.6	(±3.0)	98.4	(±2.4)
Arizona	96.1	(±2.1)	98.0	(±1.4)	98.6	(±0.9)	99.5	(±0.7)
Arkansas	94.7	(±2.9)	98.3	(±1.8)	97.4	(±1.6)	96.3	(±2.7)
California	94.9	(±2.2)	97.5	(±1.3)	97.3	(±1.2)	97.1	(±2.3)
Colorado	93.1	(±3.7)	95.0	(±3.4)	96.5	(±2.3)	99.4	(±1.2)
Connecticut	95.7	(±2.7)	94.2	(±4.6)	96.1	(±2.9)	98.9	(±1.7)
Delaware	97.3	(±2.0)	98.7	(±1.1)	98.3	(±1.1)	97.7	(±2.3)
District of Columbia	98.2	(±2.3)	99.3	(±1.3)	99.6	(±0.8)	100.0	(±0.0)
Florida	93.5	(±2.7)	97.3	(±1.5)	98.0	(±1.0)	98.8	(±1.1)
Georgia	97.1	(±2.6)	98.1	(±1.9)	98.7	(±1.3)	100.0	(±0.0)
Hawaii	96.4	(±2.8)	96.1	(±3.1)	95.6	(±2.5)	94.6	(±4.3)
Idaho	94.5	(±1.9)	95.3	(±1.9)	95.9	(±1.4)	96.6	(±2.1)
Illinois	93.4	(±4.2)	98.9	(±1.6)	98.8	(±1.2)	98.6	(±1.9)
Indiana	96.1	(±2.4)	95.6	(±3.1)	96.6	(±2.0)	98.0	(±1.8)
Iowa	94.0	(±2.6)	95.4	(±2.2)	95.8	(±1.5)	96.2	(±2.1)
Kansas	94.5	(±3.6)	97.8	(±1.9)	97.9	(±1.5)	97.9	(±2.5)
Kentucky	94.5	(±2.5)	97.5	(±1.4)	97.7	(±1.0)	98.2	(±1.2)
Louisiana	92.2	(±4.8)	95.9	(±3.5)	96.9	(±2.3)	98.8	(±1.7)
Maine	96.3	(±2.6)	95.3	(±3.6)	96.4	(±2.3)	98.0	(±2.3)
Maryland	96.8	(±1.9)	98.3	(±1.3)	98.6	(±0.9)	99.1	(±0.8)
Massachusetts	97.4	(±2.3)	96.4	(±3.1)	96.4	(±2.2)	96.4	(±3.0)
Michigan	98.4	(±1.4)	96.0	(±3.4)	96.1	(±2.3)	96.2	(±3.1)
Minnesota	93.1	(±2.3)	96.7	(±1.6)	96.8	(±1.2)	96.8	(±1.7)
Mississippi	97.5	(±2.2)	98.9	(±1.6)	98.2	(±1.7)	97.0	(±3.5)
Missouri	96.5	(±2.5)	98.3	(±2.1)	98.5	(±1.5)	98.9	(±1.8)
Montana	94.5	(±3.0)	91.0	(±4.5)	94.5	(±2.8)	99.2	(±1.6)
Nebraska	93.0	(±3.4)	95.5	(±2.3)	95.5	(±1.7)	95.4	(±2.6)
Nevada	94.1	(±5.0)	96.8	(±3.0)	96.4	(±2.9)	95.3	(±6.9)
New Hampshire	95.1	(±3.6)	96.1	(±3.6)	96.9	(±2.4)	98.1	(±2.7)
New Jersey	95.5	(±3.3)	96.3	(±2.3)	96.5	(±1.7)	96.9	(±2.4)
New Mexico	90.9	(±4.1)	95.0	(±3.4)	95.5	(±2.4)	96.5	(±2.9)
New York	95.0	(±2.4)	97.4	(±1.8)	97.1	(±1.4)	96.6	(±2.3)
North Carolina	96.4	(±2.1)	96.8	(±1.8)	97.0	(±1.4)	97.5	(±2.2)
North Dakota	92.4	(±4.4)	94.6	(±3.4)	96.2	(±2.1)	98.3	(±1.8)
Ohio	97.1	(±2.1)	96.9	(±2.3)	97.4	(±1.6)	98.5	(±1.5)
Oklahoma	96.4	(±2.7)	98.3	(±1.3)	98.6	(±1.0)	99.5	(±1.0)
Oregon	94.4	(±2.4)	96.0	(±2.2)	95.9	(±1.6)	95.7	(±2.5)
Pennsylvania	96.0	(±1.9)	96.7	(±1.9)	97.4	(±1.3)	98.5	(±1.3)
Rhode Island	97.6	(±2.0)	97.4	(±2.5)	97.0	(±2.0)	96.3	(±3.3)
South Carolina	98.7	(±1.4)	99.4	(±0.9)	99.4	(±0.7)	99.5	(±1.0)
South Dakota	92.9	(±3.4)	96.9	(±2.2)	96.8	(±1.6)	96.7	(±2.4)
Tennessee	95.4	(±2.5)	96.7	(±2.4)	97.7	(±1.6)	99.2	(±1.5)
Texas	93.3	(±3.9)	98.2	(±2.2)	97.5	(±1.9)	96.4	(±3.5)
Utah	94.3	(±4.0)	96.4	(±2.5)	96.9	(±1.6)	97.6	(±1.9)
Vermont	94.7	(±2.3)	95.3	(±2.5)	97.0	(±1.5)	99.4	(±0.8)
Virginia	95.7	(±2.3)	97.6	(±1.9)	98.1	(±1.3)	98.9	(±1.1)
Washington	94.0	(±3.0)	94.7	(±2.5)	95.1	(±2.0)	95.6	(±3.1)
West Virginia	97.0	(±1.8)	99.0	(±1.0)	98.2	(±1.2)	96.9	(±2.8)
Wisconsin	89.0	(±4.7)	95.7	(±3.2)	96.3	(±2.3)	97.3	(±3.2)
Wyoming	92.2	(±3.5)	94.5	(±3.0)	94.9	(±2.3)	95.6	(±3.4)
Median	**95.1%**		**96.7%**		**97.0%**		**97.7%**	
Range	**(89.0%–98.7%)**		**(91.0%–99.4%)**		**(94.5%–99.6%)**		**(94.6%–100.0%)**	

*n = 41,328.

†Respondents were asked, "About how long has it been since you last had your blood pressure taken by a doctor, nurse, or other health professional?" Persons whose blood pressure had been checked during the preceding 2 years are reported.

§Confidence interval. CIs were calculated by multiplying the standard error by 1.96.

TABLE 7. Percentage of adults aged ≥55 years who reported receiving a blood cholesterol check during the preceding 5 years, by state and age group — United States, Behavioral Risk Factor Surveillance System, 1997*†

State	Age group (yrs) 55–64 %	(95% CI§)	65–74 %	(95% CI)	≥65 %	(95% CI)	≥75 %	(95% CI)
Alabama	85.7	(±4.7)	84.9	(± 6.1)	84.4	(±4.4)	83.5	(± 6.3)
Alaska	84.1	(±8.3)	81.3	(±11.2)	80.0	(±9.8)	75.6	(±20.1)
Arizona	86.9	(±5.0)	88.3	(± 4.2)	88.8	(±3.6)	89.5	(± 5.3)
Arkansas	75.5	(±6.1)	80.8	(± 5.8)	79.3	(±4.7)	77.0	(± 7.8)
California	86.7	(±3.6)	92.8	(± 2.8)	90.9	(±2.4)	88.1	(± 4.1)
Colorado	88.3	(±4.8)	89.4	(± 4.6)	88.1	(±3.7)	85.4	(± 6.3)
Connecticut	86.9	(±8.4)	88.1	(± 4.2)	86.4	(±3.7)	83.7	(± 6.6)
Delaware	84.6	(±4.5)	91.7	(± 3.0)	92.0	(±2.4)	92.5	(± 3.9)
District of Columbia	87.6	(±5.0)	89.6	(± 5.3)	91.0	(±3.8)	93.2	(± 5.3)
Florida	86.9	(±3.9)	93.4	(± 2.3)	92.9	(±1.8)	92.3	(± 2.8)
Georgia	85.6	(±4.8)	88.8	(± 4.6)	89.1	(±3.8)	90.0	(± 6.4)
Hawaii	89.0	(±5.1)	89.9	(± 4.6)	87.5	(±4.1)	83.7	(± 7.6)
Idaho	81.8	(±3.6)	85.5	(± 3.3)	86.6	(±2.4)	88.2	(± 3.5)
Illinois	81.2	(±6.8)	91.4	(± 4.5)	90.4	(±3.6)	88.6	(± 6.4)
Indiana	86.1	(±4.2)	84.6	(± 5.2)	84.7	(±3.8)	84.8	(± 5.6)
Iowa	78.8	(±4.6)	85.8	(± 3.7)	85.9	(±2.6)	86.0	(± 3.5)
Kansas	74.9	(±6.5)	73.9	(± 6.2)	71.7	(±4.8)	68.3	(± 7.3)
Kentucky	80.9	(±4.1)	83.4	(± 3.7)	83.3	(±2.9)	83.3	(± 4.4)
Louisiana	77.8	(±7.1)	85.4	(± 5.5)	85.1	(±4.7)	84.4	(± 8.8)
Maine	86.6	(±4.9)	84.8	(± 5.7)	85.8	(±4.2)	87.3	(± 6.0)
Maryland	86.4	(±3.7)	89.4	(± 3.6)	89.1	(±2.9)	88.5	(± 4.8)
Massachusetts	86.3	(±6.2)	83.6	(± 6.0)	84.4	(±4.3)	85.5	(± 6.0)
Michigan	94.9	(±2.5)	91.6	(± 4.1)	87.9	(±3.4)	82.9	(± 5.7)
Minnesota	78.2	(±3.9)	83.7	(± 3.5)	81.6	(±2.7)	78.9	(± 4.1)
Mississippi	76.3	(±7.1)	85.0	(± 6.2)	85.0	(±4.6)	84.9	(± 7.0)
Missouri	81.5	(±5.5)	89.6	(± 4.3)	89.5	(±3.4)	89.1	(± 5.6)
Montana	81.1	(±5.6)	78.7	(± 6.2)	79.8	(±4.5)	81.3	(± 6.2)
Nebraska	80.2	(±5.3)	82.7	(± 4.5)	82.2	(±3.3)	81.6	(± 4.9)
Nevada	87.9	(±6.1)	90.1	(± 5.9)	89.6	(±5.6)	88.4	(±13.2)
New Hampshire	92.9	(±3.7)	89.8	(± 5.3)	88.3	(±4.1)	85.8	(± 6.8)
New Jersey	87.4	(±4.9)	87.3	(± 4.3)	86.4	(±3.5)	84.8	(± 6.0)
New Mexico	76.6	(±6.4)	87.2	(± 4.8)	85.8	(±3.9)	83.4	(± 6.6)
New York	90.0	(±3.5)	90.7	(± 3.4)	87.3	(±3.0)	81.9	(± 5.4)
North Carolina	89.4	(±3.2)	91.2	(± 2.8)	88.9	(±2.5)	84.3	(± 4.8)
North Dakota	80.1	(±6.3)	83.8	(± 5.4)	85.7	(±3.6)	88.3	(± 4.6)
Ohio	85.1	(±4.8)	88.3	(± 3.6)	86.9	(±3.0)	83.9	(± 5.2)
Oklahoma	84.4	(±5.6)	83.1	(± 4.0)	84.1	(±3.3)	87.0	(± 5.2)
Oregon	88.2	(±3.5)	92.1	(± 3.1)	91.1	(±2.4)	89.4	(± 4.0)
Pennsylvania	83.3	(±4.0)	85.6	(± 3.8)	84.0	(±3.0)	81.4	(± 4.9)
Rhode Island	88.1	(±5.1)	90.2	(± 4.7)	90.3	(±3.4)	90.4	(± 4.6)
South Carolina	85.6	(±4.7)	88.0	(± 4.2)	89.0	(±3.2)	91.0	(± 4.6)
South Dakota	80.0	(±6.0)	86.3	(± 4.5)	82.6	(±3.4)	77.7	(± 5.5)
Tennessee	83.4	(±4.1)	88.8	(± 3.8)	86.6	(±3.2)	83.0	(± 5.3)
Texas	84.5	(±5.2)	93.1	(± 3.6)	90.1	(±3.5)	84.8	(± 7.2)
Utah	81.7	(±6.2)	88.5	(± 5.3)	86.3	(±4.1)	83.3	(± 6.2)
Vermont	84.4	(±4.1)	83.2	(± 4.3)	84.6	(±3.2)	86.7	(± 4.6)
Virginia	88.0	(±3.7)	91.4	(± 3.2)	92.0	(±2.7)	93.1	(± 4.9)
Washington	86.9	(±4.0)	89.2	(± 3.6)	87.7	(±3.0)	85.5	(± 5.2)
West Virginia	82.8	(±4.8)	90.4	(± 3.6)	88.8	(±2.9)	85.9	(± 5.2)
Wisconsin	83.9	(±5.1)	90.4	(± 4.2)	87.4	(±4.2)	82.2	(± 8.6)
Wyoming	89.3	(±4.0)	88.2	(± 4.6)	89.4	(±3.4)	91.4	(± 4.7)
Median	**84.9%**		**88.3%**		**86.8%**		**85.2%**	
Range	**(74.9%–94.9%)**		**(73.9%–91.6%)**		**(71.7%–92.9%)**		**(68.3%–93.2%)**	

*n = 39,843.

†Respondents were asked, "About how long has it been since you last had your blood cholesterol checked?" Persons whose blood cholesterol had been checked during the preceding 5 years are reported.

§Confidence interval. CIs were calculated by multiplying the standard error by 1.96.

TABLE 8. Percentage of women aged ≥55 years who reported receiving a mammogram during the preceding 2 years, by state and age group — United States, Behavioral Risk Factor Surveillance System, 1997*

State	Age group (yrs) 55–64 %	55–64 (95% CI†)	65–74 %	65–74 (95% CI)	≥75 %	≥75 (95% CI)
Alabama	74.3	(± 7.1)	78.4	(± 6.7)	62.3	(± 9.4)
Alaska	90.7	(± 8.5)	74.2	(±15.7)	§	
Arizona	74.1	(±11.4)	75.4	(± 9.2)	71.1	(±10.5)
Arkansas	57.3	(± 8.8)	55.7	(± 8.6)	50.3	(± 9.6)
California	80.4	(± 5.8)	80.8	(± 5.6)	70.8	(± 6.5)
Colorado	78.3	(± 8.2)	73.8	(± 8.6)	68.7	(±10.2)
Connecticut	87.1	(± 5.9)	75.4	(± 9.2)	65.5	(± 9.4)
Delaware	83.3	(± 5.7)	77.1	(± 6.1)	66.6	(± 8.9)
District of Columbia	82.3	(± 7.6)	83.8	(± 8.0)	75.3	(±11.0)
Florida	79.3	(± 5.5)	81.5	(± 4.5)	72.8	(± 6.2)
Georgia	75.1	(± 7.7)	79.4	(± 7.4)	58.6	(±12.1)
Hawaii	84.8	(± 7.5)	82.2	(± 7.0)	75.1	(± 9.6)
Idaho	66.6	(± 8.1)	66.6	(± 5.7)	54.7	(± 6.6)
Illinois	76.2	(± 6.7)	76.1	(± 6.5)	55.7	(± 8.6)
Indiana	74.9	(± 8.1)	70.3	(± 8.0)	37.9	(± 9.6)
Iowa	77.1	(± 5.5)	66.6	(± 5.9)	53.8	(± 6.2)
Kansas	71.8	(± 8.9)	68.5	(± 8.0)	65.4	(± 8.3)
Kentucky	72.2	(± 5.6)	70.5	(± 5.4)	57.5	(± 5.8)
Louisiana	69.9	(± 9.4)	80.8	(± 8.3)	53.6	(±11.8)
Maine	77.1	(± 8.9)	84.4	(± 7.5)	63.1	(±10.3)
Maryland	80.8	(± 6.1)	81.4	(± 5.8)	66.3	(± 9.1)
Massachusetts	85.6	(±10.3)	77.8	(± 8.5)	65.7	(±10.7)
Michigan	81.4	(± 6.2)	82.6	(± 6.7)	70.0	(± 8.4)
Minnesota	82.0	(± 4.9)	77.3	(± 5.1)	56.0	(± 5.7)
Mississippi	67.0	(± 8.6)	68.4	(± 8.4)	50.4	(±10.2)
Missouri	72.1	(± 8.6)	71.4	(± 9.2)	60.9	(± 9.9)
Montana	70.3	(± 7.8)	70.8	(± 8.9)	69.2	(± 8.3)
Nebraska	77.8	(± 6.5)	65.3	(± 7.6)	54.4	(± 7.0)
Nevada	77.0	(±10.1)	74.8	(±11.2)	39.4	(±23.8)¶
New Hampshire	86.0	(± 7.2)	79.6	(± 9.8)	66.0	(±10.9)
New Jersey	77.2	(± 7.3)	74.9	(± 6.9)	58.7	(± 9.3)
New Mexico	71.6	(± 8.9)	70.8	(± 8.7)	56.9	(±10.5)
New York	84.2	(± 5.4)	78.4	(± 5.9)	70.0	(± 7.8)
North Carolina	76.6	(± 5.6)	78.0	(± 5.3)	59.3	(± 7.1)
North Dakota	71.5	(± 8.4)	77.7	(± 7.7)	64.4	(± 7.8)
Ohio	76.0	(± 7.4)	76.6	(± 6.5)	57.3	(± 9.4)
Oklahoma	77.9	(± 8.4)	60.0	(± 7.7)	52.1	(± 9.4)
Oregon	84.0	(± 5.3)	82.0	(± 5.2)	66.4	(± 7.4)
Pennsylvania	81.0	(± 4.9)	71.5	(± 6.1)	63.4	(± 7.0)
Rhode Island	84.8	(± 7.1)	87.4	(± 5.7)	71.3	(± 9.2)
South Carolina	74.1	(± 7.3)	82.1	(± 5.5)	63.2	(± 9.4)
South Dakota	71.8	(± 8.8)	75.7	(± 7.1)	61.3	(± 7.9)
Tennessee	77.5	(± 5.7)	70.9	(± 6.3)	64.5	(± 7.8)
Texas	66.9	(± 7.8)	71.5	(± 8.1)	52.2	(±11.1)
Utah	73.2	(± 9.4)	74.1	(± 9.3)	61.4	(±10.2)
Vermont	75.1	(± 7.1)	75.3	(± 6.5)	61.4	(± 8.3)
Virginia	79.7	(± 5.7)	74.9	(± 7.3)	57.2	(±10.7)
Washington	79.2	(± 6.2)	72.8	(± 6.7)	61.3	(± 8.0)
West Virginia	72.3	(± 7.1)	69.5	(± 6.5)	60.6	(± 7.6)
Wisconsin	72.4	(± 9.1)	75.9	(± 7.4)	54.5	(±10.6)
Wyoming	70.7	(± 7.0)	73.0	(± 8.0)	64.8	(± 9.0)
Median	**77.0%**		**75.4%**		**61.4%**	
Range	**(57.3%–90.73%)**		**(55.7%–87.4%)**		**(37.9%–75.3%)**	

*n = 26,408.
†Confidence interval. CIs were calculated by multiplying the standard error by 1.96.
§Insufficient number of respondents.
¶Estimate might be unstable (relative standard error >0.3) because of small sample size.

The BRFSS also collects data on eligible women (i.e., those with an intact uterus) who reported having a Pap test during the preceding 3 years (Table 9). The median percentages were 83.4% among women aged 55–64 years, 77.4% among women aged 65–74 years, and 58.2% among women aged ≥75 years. State-specific percentages ranged from 66.8% (Arizona) to 92% (District of Columbia) among women aged 55–64 years; from 65.7% (Nevada) to 89.1% (South Carolina) among women aged 65–74 years; and from 40.7% (Mississippi) to 81.8% (District of Columbia) among women aged ≥75 years. For all states except Arizona, the lowest percentage was among women aged ≥75 years.

The median percentages of persons who reported having FOBT during the preceding 2 years were 25.8% among persons aged 55–64 years, 31.7% among persons aged 65–74 years, and 27.2% among persons aged ≥75 years (Table 10). The percentages ranged from 12.9% (Mississippi) to 40.0% (North Carolina) among persons aged 55–64 years; from 13.6% (Oklahoma) to 46.8% (Oregon) among persons aged 65–74 years; and from 13.9% (Oklahoma) to 43.0% (Maine) among persons aged ≥75 years. When the values were stratified according to sex and age, more women reported having FOBT than did men in both age groups (55–64 years and ≥65 years). Among both men and women, the median percentages were higher among persons aged ≥65 years than among those aged 55–64 years.

The median percentages of persons who reported ever having sigmoidoscopy or proctoscopy were 40.3% among persons aged 55–64 years, 48.3% among persons aged 65–74 years, and 46.3% among persons aged ≥75 years (Table 11). State-specific percentages ranged from 26.8% (Oklahoma) to 54.0% (Minnesota) among persons aged 55–64 years; from 17.4% (Oklahoma) to 61.9% (Wisconsin) among persons aged 65–74 years; and from 30.6% (Oklahoma) to 63.5% (Virginia) among persons aged ≥75 years. Among men, the median percentages were 44.3% among those aged 55–64 years and 53.3% among those aged ≥65 years. Among women, the corresponding median values were 37.2% and 43.3%. Median percentages were consistently higher among men, as well as among men and women aged ≥65 years.

Vaccination

In 1997, the percentage of persons aged 55–64 years who reported receiving influenza vaccination during the preceding 12 months ranged from 28.5% in Georgia to 54.7% in Colorado (median: 38.2%) (Table 12). Among persons aged 65–74 years, percentages ranged from 48.7% in Nevada to 72.4% in Colorado (median: 63.6%). Among persons aged ≥75 years, percentages ranged from 51.7% in the District of Columbia to 82.0% in Arizona (median: 71.4%).

The percentage of persons aged 55–64 years who reported in 1997 that they had ever received a pneumococcal vaccination ranged from 9.5% in New York to 30.7% in Alaska (median: 17.1%) (Table 13). Among persons aged 65–74 years, percentages ranged from 30.1% in New Jersey to 56.9% in Arizona (median: 42.6%). Among persons aged ≥75 years, percentages ranged from 31.4% in Louisiana to 79.0% in Nevada (median: 53.3%).

TABLE 9. Percentage of women aged ≥55 years who reported receiving a Papanicalaou test during the preceding 3 years, by state and age group — United States, Behavioral Risk Factor Surveillance System, 1997*

State	Age groups (yrs) 55–64 %	55–64 (95% CI†)	65–74 %	65–74 (95% CI)	≥75 %	≥75 (95% CI)
Alabama	85.0	(± 8.3)	75.3	(± 9.5)	61.7	(±12.9)
Alaska	88.5	(±13.9)	78.0	(±20.6)	§	
Arizona	66.8	(±15.4)	74.0	(±12.9)	71.8	(±13.8)
Arkansas	69.9	(±12.3)	67.2	(±11.0)	51.1	(±12.6)
California	85.7	(± 6.7)	84.2	(± 8.3)	64.8	(± 9.4)
Colorado	87.0	(± 9.8)	78.6	(±11.5)	64.8	(±14.3)
Connecticut	82.0	(± 8.6)	76.3	(±13.3)	53.8	(±13.3)
Delaware	83.7	(± 6.8)	83.2	(± 6.7)	63.8	(±12.0)
District of Columbia	92.0	(± 5.9)	82.9	(±10.7)	81.8	(±11.9)
Florida	87.4	(± 6.6)	84.4	(± 5.8)	64.2	(± 8.8)
Georgia	86.2	(± 8.6)	88.5	(± 7.5)	66.1	(±13.3)
Hawaii	83.4	(±11.6)	81.4	(± 8.9)	74.6	(±13.4)
Idaho	81.8	(± 6.4)	72.6	(± 7.9)	47.2	(± 9.1)
Illinois	84.4	(± 7.1)	68.3	(± 8.6)	45.4	(±10.8)
Indiana	84.4	(± 9.7)	70.0	(±11.2)	45.1	(±13.0)
Iowa	77.5	(± 7.3)	70.5	(± 7.4)	56.2	(± 7.7)
Kansas	79.0	(±11.9)	79.4	(± 8.2)	66.4	(±10.1)
Kentucky	69.0	(± 8.2)	77.0	(± 7.0)	59.2	(± 8.3)
Louisiana	75.6	(±13.0)	74.4	(±13.4)	53.8	(±18.5)
Maine	84.0	(± 9.3)	80.8	(±11.1)	69.4	(±12.3)
Maryland	87.9	(± 5.8)	80.2	(± 6.9)	51.5	(±12.8)
Massachusetts	91.7	(± 7.1)	77.4	(±10.3)	59.8	(±15.1)
Michigan	88.1	(± 7.0)	87.6	(± 7.4)	54.5	(±12.0)
Minnesota	83.1	(± 5.8)	82.0	(± 5.7)	61.0	(± 7.3)
Mississippi	84.1	(± 8.5)	74.8	(±11.0)	40.7	(±15.7)
Missouri	82.0	(± 9.0)	74.1	(±11.7)	52.3	(±12.7)
Montana	75.2	(±10.7)	77.8	(±11.8)	58.4	(±11.1)
Nebraska	83.2	(± 7.6)	69.0	(±10.0)	50.0	(± 9.1)
Nevada	80.6	(±14.2)	65.7	(±18.6)	§	
N. Hampshire	88.7	(± 8.1)	79.7	(±14.4)	59.7	(±15.8)
New Jersey	79.4	(± 8.1)	73.9	(± 8.4)	52.8	(±12.0)
New Mexico	68.8	(±14.0)	72.0	(±11.3)	61.8	(±14.1)
New York	85.5	(± 6.6)	72.2	(± 7.6)	68.1	(± 9.2)
N. Carolina	84.0	(± 6.8)	80.1	(± 7.3)	58.2	(±10.1)
North Dakota	82.5	(± 9.1)	80.0	(± 9.6)	57.0	(±10.5)
Ohio	90.4	(± 5.7)	83.6	(± 6.5)	55.9	(±11.6)
Oklahoma	77.7	(±12.4)	79.5	(±10.6)	56.2	(±14.5)
Oregon	86.4	(± 7.8)	82.9	(± 7.8)	72.5	(± 9.5)
Pennsylvania	82.2	(± 6.0)	68.8	(± 7.8)	47.5	(± 9.5)
Rhode Island	85.5	(± 8.2)	81.9	(± 9.3)	50.9	(±13.0)
S. Carolina	80.1	(±10.4)	89.1	(± 6.1)	72.8	(±10.4)
South Dakota	85.0	(± 7.6)	75.5	(± 8.6)	60.9	(± 9.9)
Tennessee	85.3	(± 6.4)	79.6	(± 7.4)	70.0	(± 9.9)
Texas	73.4	(±11.1)	73.5	(±11.2)	49.6	(±16.2)
Utah	74.9	(±13.8)	75.6	(±13.3)	57.7	(±14.6)
Vermont	82.8	(± 7.0)	72.3	(± 7.9)	52.7	(±12.3)
Virginia	88.5	(± 6.3)	78.7	(± 7.5)	73.3	(±11.5)
Washington	88.3	(± 6.5)	73.4	(± 9.4)	49.6	(±11.6)
W. Virginia	74.6	(± 8.3)	67.8	(± 9.1)	57.0	(±10.3)
Wisconsin	69.7	(±11.4)	74.2	(±10.2)	50.8	(±12.3)
Wyoming	77.7	(± 9.3)	83.6	(±10.3)	66.0	(±11.4)
Median	**83.4%**		**77.4%**		**58.2%**	
Range	**(66.8%–92.0%)**		**(65.7%–89.1%)**		**(40.7%–81.8%)**	

*n = 14,592 (excludes all women without a uterus).
†Confidence interval. CIs were calculated by multiplying the standard error by 1.96.
§Insufficient number of respondents.

TABLE 10. Percentage of adults aged ≥55 years who reported receiving a fecal occult blood test during the preceding 2 years, by state, sex and age group — United States, Behavioral Risk Factor Surveillance System, 1997*

State	Age group (yrs)													
	Men				Women				Total					
	55–64		≥65		55–64		≥65		55–64		65–74		≥75	
	%	(95% CI†)	%	(95% CI)	%	(95% CI)	%	(95% CI)	%	(95% CI)	%	(95% CI)	%	(95% CI)
Alabama	17.9	(± 8.4)	17.3	(± 7.4)	19.9	(± 6.5)	19.5	(± 5.0)	**19.0**	**(± 5.3)**	**15.8**	**(± 5.3)**	**23.0**	**(± 7.4)**
Alaska	30.6	(±16.2)	20.3	(±14.3)§	33.0	(±15.3)	32.5	(±15.3)	**31.8**	**(±11.2)**	**24.5**	**(±12.3)**	**33.5**	**(±21.0)§**
Arizona	28.8	(±11.3)	35.8	(± 8.6)	21.9	(± 9.0)	30.6	(± 7.4)	**25.2**	**(± 7.6)**	**38.3**	**(± 7.4)**	**25.0**	**(± 7.9)**
Arkansas	17.2	(± 7.7)	30.5	(± 8.8)	23.7	(± 7.8)	19.6	(± 5.4)	**20.6**	**(± 5.5)**	**22.4**	**(± 6.2)**	**26.2**	**(± 7.6)**
California	15.2	(± 5.2)	25.7	(± 5.4)	28.5	(± 6.0)	31.3	(± 4.8)	**22.1**	**(± 4.0)**	**30.2**	**(± 4.9)**	**27.2**	**(± 5.2)**
Colorado	31.1	(±10.1)	39.7	(±10.2)	35.9	(±10.0)	31.8	(± 6.9)	**33.6**	**(± 7.1)**	**36.7**	**(± 7.7)**	**32.1**	**(± 8.7)**
Connecticut	37.0	(±13.1)	33.6	(± 7.7)	27.8	(± 8.7)	35.2	(± 6.6)	**32.2**	**(± 7.7)**	**34.8**	**(± 6.6)**	**34.1**	**(± 7.6)**
Delaware	37.9	(±10.4)	30.5	(± 7.3)	27.9	(± 7.1)	32.7	(± 5.6)	**32.7**	**(± 6.2)**	**32.5**	**(± 5.5)**	**30.6**	**(± 7.1)**
District of Columbia	38.9	(± 8.4)	40.6	(± 7.1)	44.2	(±11.6)	41.8	(± 8.5)	**38.9**	**(± 8.4)**	**46.0**	**(± 9.4)**	**32.0**	**(±10.1)**
Florida	22.2	(± 6.6)	34.2	(± 5.3)	26.5	(± 6.3)	37.8	(± 4.3)	**24.5**	**(± 4.6)**	**35.7**	**(± 4.4)**	**37.1**	**(± 4.9)**
Georgia	33.6	(± 6.7)	27.2	(± 5.2)	32.9	(± 8.3)	29.0	(± 7.0)	**33.6**	**(± 6.7)**	**29.9**	**(± 6.6)**	**20.9**	**(± 8.3)**
Hawaii	26.1	(±10.7)	33.0	(± 8.4)	37.5	(±10.4)	39.3	(± 7.4)	**32.0**	**(± 7.5)**	**34.9**	**(± 7.2)**	**38.8**	**(± 8.8)**
Idaho	21.1	(± 7.2)	24.5	(± 5.5)	27.3	(± 6.2)	32.5	(± 4.4)	**24.2**	**(± 4.6)**	**30.8**	**(± 4.7)**	**26.7**	**(± 4.9)**
Illinois	16.9	(± 9.0)	35.2	(±11.3)	28.3	(± 9.5)	28.7	(± 7.1)	**23.1**	**(± 6.6)**	**35.2**	**(± 7.9)**	**23.5**	**(± 9.2)**
Indiana	16.1	(± 6.7)	21.6	(± 7.1)	28.3	(± 8.6)	23.8	(± 5.7)	**22.1**	**(± 5.5)**	**27.1**	**(± 6.3)**	**17.1**	**(± 5.8)**
Iowa	23.5	(± 6.3)	30.2	(± 6.6)	30.2	(± 6.4)	28.9	(± 4.2)	**27.0**	**(± 4.6)**	**31.0**	**(± 5.3)**	**27.5**	**(± 5.1)**
Kansas	38.2	(±10.7)	29.7	(± 8.7)	30.8	(± 8.9)	32.7	(± 6.0)	**34.3**	**(± 6.9)**	**35.1**	**(± 7.0)**	**26.3**	**(± 6.9)**
Kentucky	24.5	(± 6.8)	28.7	(± 6.1)	26.9	(± 5.5)	30.6	(± 4.2)	**25.8**	**(± 4.3)**	**32.3**	**(± 4.8)**	**25.6**	**(± 4.9)**
Louisiana	20.3	(± 9.9)	27.2	(± 8.7)	17.7	(± 7.6)	32.8	(± 7.3)	**18.9**	**(± 6.4)**	**32.4**	**(± 7.0)**	**27.0**	**(± 9.4)**
Maine	30.0	(± 9.9)	34.8	(± 8.6)	37.5	(± 9.7)	45.6	(± 7.9)	**33.9**	**(± 6.9)**	**39.9**	**(± 8.0)**	**43.0**	**(± 9.0)**
Maryland	26.5	(± 7.3)	40.8	(± 6.8)	28.9	(± 6.7)	35.9	(± 5.2)	**27.8**	**(± 4.8)**	**39.0**	**(± 5.3)**	**35.9**	**(± 6.8)**
Massachusetts	26.5	(±12.1)	31.2	(± 9.7)	34.9	(±10.7)	44.3	(± 7.8)	**31.0**	**(± 8.1)**	**41.1**	**(± 8.1)**	**35.5**	**(± 9.5)**
Michigan	33.6	(± 9.5)	26.8	(± 7.8)	36.6	(± 7.7)	36.1	(± 6.3)	**35.2**	**(± 6.1)**	**34.2**	**(± 6.8)**	**29.7**	**(± 7.1)**
Minnesota	28.4	(± 6.0)	36.6	(± 5.9)	36.3	(± 6.4)	37.5	(± 4.3)	**32.5**	**(± 4.3)**	**41.0**	**(± 4.8)**	**32.4**	**(± 4.7)**
Mississippi	12.8	(± 7.4)	7.8	(± 5.2)§	13.1	(± 6.4)	21.0	(± 5.8)	**12.9**	**(± 5.0)**	**16.4**	**(± 5.3)**	**14.8**	**(± 6.6)**
Missouri	23.7	(±10.0)	25.6	(± 8.0)	34.5	(± 9.3)	26.6	(± 5.9)	**29.3**	**(± 6.8)**	**23.0**	**(± 5.8)**	**31.1**	**(± 7.6)**
Montana	24.8	(±10.0)	16.7	(± 6.4)	32.0	(± 8.3)	26.6	(± 6.2)	**28.5**	**(± 6.5)**	**21.6**	**(± 6.1)**	**23.4**	**(± 7.0)**
Nebraska	20.6	(± 9.0)	24.6	(± 6.4)	21.7	(± 6.3)	31.3	(± 5.1)	**21.2**	**(± 5.4)**	**31.2**	**(± 5.8)**	**25.5**	**(± 5.3)**

Nevada	13.1	(± 9.5)	25.2	(±17.4)[§]	13.7	(± 7.1)	20.6	(± 9.3)	13.4	(± 5.9)	24.2	(±11.5)	18.7	(±16.0)[§]
New Hampshire	32.9	(±14.2)	31.9	(± 9.2)	34.5	(±10.1)	46.4	(± 8.4)	33.7	(± 8.7)	42.6	(± 8.3)	36.3	(± 9.4)
New Jersey	27.5	(± 9.6)	28.1	(± 7.2)	34.1	(± 8.2)	30.7	(± 5.9)	31.0	(± 6.3)	32.0	(± 6.0)	25.8	(± 6.9)
New Mexico	16.1	(± 8.6)	22.5	(± 7.8)	19.1	(± 7.6)	29.4	(± 6.9)	17.7	(± 5.7)	24.8	(± 6.4)	29.1	(± 8.6)
New York	36.7	(± 8.8)	35.3	(± 7.6)	32.5	(± 7.1)	31.7	(± 5.1)	34.4	(± 5.6)	31.7	(± 5.5)	35.2	(± 6.4)
North Carolina	35.4	(± 8.0)	34.5	(± 6.8)	43.9	(± 6.6)	38.3	(± 4.7)	40.0	(± 5.2)	39.6	(± 4.9)	31.5	(± 6.1)
North Dakota	16.9	(± 8.9)	20.8	(± 6.8)	24.5	(± 8.4)	30.1	(± 5.9)	20.8	(± 6.3)	25.4	(± 6.1)	27.1	(± 6.2)
Ohio	16.7	(± 7.0)	38.9	(± 7.8)	22.5	(± 7.0)	37.2	(± 5.6)	19.8	(± 5.0)	41.8	(± 5.8)	30.2	(± 7.0)
Oklahoma	12.7	(± 7.7)	7.6	(± 3.4)	16.1	(± 6.8)	17.8	(± 4.8)	14.5	(± 5.1)	13.6	(± 3.8)	13.9	(± 5.7)
Oregon	21.7	(± 6.5)	33.5	(± 7.0)	44.2	(± 7.5)	47.6	(± 5.3)	33.2	(± 5.3)	46.8	(± 5.7)	33.6	(± 5.9)
Pennsylvania	26.5	(± 7.6)	29.0	(± 6.7)	27.6	(± 5.7)	31.9	(± 4.7)	27.1	(± 4.7)	32.7	(± 4.9)	27.8	(± 6.3)
Rhode Island	22.2	(± 9.5)	25.1	(± 8.0)	24.4	(± 8.6)	30.6	(± 6.3)	23.3	(± 6.4)	27.4	(± 6.4)	30.3	(± 7.7)
South Carolina	17.6	(± 7.4)	28.7	(± 7.6)	23.6	(± 6.9)	29.5	(± 5.4)	20.8	(± 5.2)	28.1	(± 5.5)	31.1	(± 7.6)
South Dakota	19.8	(± 8.3)	16.8	(± 5.8)	19.3	(± 7.3)	29.0	(± 5.6)	19.6	(± 5.4)	25.7	(± 5.9)	21.5	(± 5.5)
Tennessee	21.1	(± 7.8)	22.1	(± 7.2)	27.3	(± 5.7)	27.5	(± 4.9)	24.4	(± 4.8)	28.2	(± 5.5)	20.8	(± 6.0)
Texas	24.5	(± 8.9)	30.0	(± 8.9)	28.5	(± 7.4)	26.8	(± 6.2)	26.6	(± 5.7)	30.7	(± 6.7)	23.6	(± 8.1)
Utah	18.0	(± 9.1)	21.7	(± 8.1)	23.8	(± 9.9)	25.0	(± 6.9)	21.1	(± 7.1)	21.2	(± 7.2)	26.5	(± 7.8)
Vermont	27.6	(± 7.5)	40.0	(± 7.1)	39.3	(± 7.8)	44.0	(± 5.8)	33.6	(± 5.4)	44.8	(± 5.8)	38.8	(± 7.1)
Virginia	17.3	(± 8.3)	27.8	(± 9.2)	27.3	(± 6.2)	27.3	(± 6.9)	22.9	(± 5.0)	27.9	(± 6.8)	26.7	(± 9.6)
Washington	28.6	(± 7.3)	41.2	(± 7.1)	39.9	(± 7.4)	42.9	(± 5.5)	34.3	(± 5.2)	45.3	(± 5.9)	37.8	(± 6.5)
West Virginia	14.2	(± 6.3)	21.5	(± 6.4)	18.2	(± 5.7)	21.3	(± 4.5)	16.3	(± 4.2)	22.4	(± 4.8)	19.5	(± 5.5)
Wisconsin	18.0	(± 7.0)	28.0	(± 8.8)	26.3	(± 9.3)	32.3	(± 6.7)	22.2	(± 6.0)	35.1	(± 7.2)	22.6	(± 7.1)
Wyoming	14.2	(± 6.8)	20.2	(± 7.1)	21.9	(± 6.3)	21.9	(± 5.3)	18.1	(± 4.7)	22.5	(± 5.7)	18.9	(± 6.4)
Median	**23.5%**		**28.7%**		**27.9%**		**31.3%**		**25.8%**		**31.7%**		**27.2%**	
Range	**(12.7%–38.9%)**		**(7.6%–41.2%)**		**(13.1%–44.2%)**		**(17.8%–47.6%)**		**(12.9%–40.0%)**		**(13.6%–46.8%)**		**(13.9%–43.0%)**	

*n = 43,692.
†Confidence interval. CIs were calculated by multiplying the standard error by 1.96.
§Estimates might be unstable (relative standard error >0.3) because of small sample size.

TABLE 11. Percentage of adults aged ≥55 years who reported ever receiving a proctoscopy or sigmoidoscopy, by state, sex, and age group — United States, Behavioral Risk Factor Surveillance System, 1997*

State	Age group (yrs)													
	Men				Women				Total					
	55–64		≥65		55–64		≥65		55–64		65–74		≥75	
	%	(95% CI†)	%	(95% CI)	%	(95% CI)	%	(95% CI)	%	(95% CI)	%	(95% CI)	%	(95% CI)
Alabama	48.4	(±10.0)	51.9	(±10.0)	40.2	(± 8.0)	45.9	(± 6.4)	**44.0**	**(± 6.3)**	**49.4**	**(± 6.9)**	**46.6**	**(± 8.4)**
Alaska	48.7	(±16.9)	62.3	(±16.9)	53.9	(±15.8)	37.4	(±15.6)	**51.3**	**(±11.5)**	**55.6**	**(±13.4)**	§	
Arizona	40.7	(±12.4)	48.9	(±12.4)	30.4	(± 8.0)	43.0	(± 7.7)	**35.3**	**(± 8.8)**	**47.7**	**(± 8.1)**	**42.4**	**(± 8.8)**
Arkansas	27.5	(± 9.5)	51.4	(± 9.5)	40.9	(±15.8)	30.3	(± 6.0)	**34.6**	**(± 6.6)**	**35.8**	**(± 7.1)**	**42.9**	**(± 8.4)**
California	47.6	(± 7.8)	61.7	(± 7.8)	40.3	(±12.5)	50.7	(± 5.2)	**43.8**	**(± 5.3)**	**55.1**	**(± 5.3)**	**55.3**	**(± 6.1)**
Colorado	45.1	(±11.1)	63.4	(±11.1)	40.3	(± 8.8)	47.7	(± 7.5)	**42.6**	**(± 7.4)**	**52.8**	**(± 7.9)**	**57.0**	**(± 9.2)**
Connecticut	48.9	(±14.2)	56.6	(±14.2)	38.1	(± 7.0)	48.7	(± 7.1)	**43.3**	**(± 8.2)**	**49.0**	**(± 7.0)**	**56.3**	**(± 8.2)**
Delaware	47.4	(±10.4)	63.9	(±10.4)	41.4	(± 9.9)	52.8	(± 5.8)	**44.2**	**(± 6.4)**	**57.3**	**(± 5.7)**	**57.4**	**(± 7.3)**
District of Columbia	55.4	(±13.0)	63.7	(±13.0)	47.1	(± 9.4)	51.8	(± 8.8)	**50.8**	**(± 8.8)**	**58.0**	**(± 9.0)**	**53.3**	**(±11.0)**
Florida	45.8	(± 8.5)	59.6	(± 8.5)	37.2	(± 7.8)	48.8	(± 4.4)	**41.2**	**(± 5.3)**	**52.7**	**(± 4.7)**	**54.3**	**(± 5.3)**
Georgia	49.0	(±10.5)	62.9	(±10.5)	48.9	(±11.6)	47.5	(± 7.7)	**48.9**	**(± 7.0)**	**55.0**	**(± 7.4)**	**50.1**	**(± 9.7)**
Hawaii	63.7	(±10.6)	61.7	(±10.6)	44.3	(± 6.6)	56.0	(± 7.4)	**53.7**	**(± 7.9)**	**58.2**	**(± 7.3)**	**59.3**	**(± 8.8)**
Idaho	39.2	(± 7.5)	48.7	(± 7.5)	27.7	(± 9.3)	44.3	(± 4.6)	**33.3**	**(± 5.0)**	**45.8**	**(± 5.0)**	**46.8**	**(± 5.7)**
Illinois	37.2	(±11.3)	56.3	(±11.3)	37.1	(±10.8)	42.3	(± 7.8)	**37.2**	**(± 7.9)**	**46.2**	**(± 8.2)**	**50.5**	**(±10.9)**
Indiana	40.9	(± 8.9)	48.0	(± 8.9)	26.2	(± 6.3)	40.6	(± 6.6)	**33.6**	**(± 6.1)**	**43.8**	**(± 6.8)**	**42.8**	**(± 8.0)**
Iowa	37.5	(± 7.4)	58.1	(± 7.4)	39.8	(±10.8)	40.1	(± 4.3)	**38.7**	**(± 4.9)**	**49.2**	**(± 5.4)**	**44.8**	**(± 5.6)**
Kansas	43.0	(±10.7)	42.9	(±10.7)	30.9	(± 7.4)	40.5	(± 6.1)	**36.7**	**(± 6.9)**	**42.1**	**(± 7.1)**	**40.5**	**(± 7.8)**
Kentucky	38.0	(± 7.6)	41.1	(± 7.6)	32.7	(± 6.8)	35.8	(± 4.3)	**35.2**	**(± 4.8)**	**41.1**	**(± 5.1)**	**32.7**	**(± 5.3)**
Louisiana	36.1	(±11.6)	42.0	(±11.6)	30.5	(± 8.7)	44.7	(± 7.4)	**33.1**	**(± 7.5)**	**46.7**	**(± 7.8)**	**38.1**	**(± 9.3)**
Maine	39.2	(±10.7)	52.8	(±10.7)	38.3	(± 6.0)	47.4	(± 7.7)	**38.7**	**(± 7.3)**	**49.2**	**(± 8.0)**	**50.3**	**(± 8.8)**
Maryland	39.0	(± 8.1)	55.9	(± 8.1)	28.8	(±10.1)	37.5	(± 5.6)	**33.5**	**(± 5.3)**	**44.5**	**(± 5.4)**	**46.4**	**(± 7.6)**
Massachusetts	57.3	(±14.3)	52.6	(±14.3)	37.8	(± 9.6)	36.4	(± 7.5)	**46.9**	**(± 9.1)**	**42.6**	**(± 8.1)**	**43.6**	**(± 9.6)**
Michigan	46.7	(± 9.8)	56.0	(± 9.8)	49.4	(± 6.6)	55.4	(± 6.5)	**48.1**	**(± 6.3)**	**55.9**	**(± 7.2)**	**55.2**	**(± 7.7)**
Minnesota	59.2	(± 6.4)	62.3	(± 6.4)	49.2	(±10.8)	55.6	(± 4.2)	**54.0**	**(± 4.5)**	**59.6**	**(± 4.8)**	**56.8**	**(± 5.1)**
Mississippi	36.0	(±12.0)	40.4	(±12.0)	35.1	(± 8.0)	40.3	(± 6.5)	**35.5**	**(± 7.1)**	**38.3**	**(± 7.3)**	**43.8**	**(± 9.4)**
Missouri	34.4	(±10.3)	53.3	(±10.3)	38.1	(± 6.6)	46.9	(± 6.7)	**36.4**	**(± 6.8)**	**47.2**	**(± 7.6)**	**53.1**	**(± 8.9)**
Montana	33.1	(±10.3)	45.9	(±10.3)	39.0	(± 8.6)	47.2	(± 6.6)	**36.1**	**(± 6.8)**	**47.6**	**(± 6.9)**	**45.4**	**(± 7.9)**
Nebraska	43.2	(±11.1)	52.0	(±11.1)	31.1	(± 9.1)	40.9	(± 5.3)	**36.9**	**(± 6.6)**	**48.5**	**(± 6.3)**	**41.7**	**(± 6.0)**

Nevada	56.6	(±14.5)	60.5	(±14.5)	25.1	(± 9.1)	33.8	(±11.6)	40.7	(±10.3)	50.1	(±12.2)	34.6	(±17.7)
New Hampshire	44.3	(±14.7)	55.2	(±14.7)	39.8	(± 7.4)	42.0	(± 8.3)	42.1	(± 9.0)	51.8	(± 8.4)	39.8	(±10.4)
New Jersey	49.7	(±11.6)	45.6	(±11.6)	31.6	(±10.4)	38.8	(± 6.1)	40.3	(± 6.9)	42.5	(± 6.4)	39.7	(± 7.5)
New Mexico	39.8	(±11.2)	48.6	(±11.2)	33.2	(±10.8)	42.4	(± 6.9)	36.4	(± 7.3)	44.4	(± 7.2)	46.2	(± 9.2)
New York	48.7	(± 9.2)	57.3	(± 9.2)	37.0	(± 7.8)	42.9	(± 5.2)	42.4	(± 5.8)	47.7	(± 5.8)	49.9	(± 6.9)
North Carolina	40.2	(± 8.4)	45.2	(± 8.4)	34.8	(± 9.7)	43.4	(± 4.8)	37.3	(± 5.2)	43.2	(± 5.0)	45.8	(± 6.6)
North Dakota	50.7	(±12.0)	53.5	(±12.0)	31.9	(± 7.4)	50.9	(± 6.5)	41.0	(± 7.5)	52.2	(± 7.0)	51.7	(± 7.2)
Ohio	36.1	(± 8.7)	55.8	(± 8.7)	31.4	(± 6.5)	40.2	(± 5.9)	33.6	(± 5.7)	48.3	(± 5.7)	42.5	(± 7.6)
Oklahoma	26.9	(±10.0)	15.3	(±10.0)	26.8	(± 8.6)	24.7	(± 5.4)	26.8	(± 6.6)	17.4	(± 4.2)	30.6	(± 7.4)
Oregon	53.0	(± 8.2)	57.1	(± 8.2)	43.2	(± 8.0)	51.4	(± 5.4)	47.9	(± 5.5)	54.9	(± 5.8)	51.8	(± 6.5)
Pennsylvania	56.5	(± 8.4)	45.1	(± 8.4)	33.1	(± 8.9)	37.8	(± 5.0)	44.1	(± 5.3)	41.7	(± 5.2)	39.0	(± 6.4)
Rhode Island	51.8	(±11.3)	52.6	(±11.3)	40.6	(± 7.4)	40.6	(± 6.9)	45.9	(± 7.6)	46.4	(± 7.4)	43.4	(± 8.3)
South Carolina	39.4	(± 9.8)	33.8	(± 9.8)	22.7	(± 6.0)	31.6	(± 5.5)	30.5	(± 6.1)	31.3	(± 5.8)	34.7	(± 8.0)
South Dakota	43.4	(±10.9)	49.9	(±10.9)	23.3	(±10.2)	43.3	(± 6.2)	33.0	(± 6.8)	46.5	(± 6.9)	45.4	(± 7.0)
Tennessee	36.3	(± 9.0)	38.1	(± 9.0)	31.9	(± 7.0)	39.5	(± 5.2)	34.0	(± 5.5)	42.9	(± 6.1)	32.8	(± 6.5)
Texas	38.8	(± 9.9)	48.6	(± 9.9)	30.1	(± 8.2)	46.6	(± 6.9)	34.3	(± 6.2)	48.9	(± 7.2)	45.0	(± 9.2)
Utah	45.2	(±10.6)	59.6	(±10.6)	37.3	(± 6.3)	46.5	(± 7.9)	40.9	(± 7.8)	52.8	(± 8.5)	55.4	(± 8.9)
Vermont	44.5	(± 8.2)	52.5	(± 8.2)	33.6	(± 7.6)	42.3	(± 5.8)	38.9	(± 5.6)	44.0	(± 5.9)	49.7	(± 7.2)
Virginia	45.3	(±10.7)	58.4	(±10.7)	41.2	(±11.0)	51.7	(± 6.8)	43.0	(± 6.5)	49.6	(± 7.1)	63.5	(± 8.5)
Washington	45.9	(± 8.3)	56.7	(± 8.3)	44.7	(± 7.5)	48.3	(± 5.6)	45.3	(± 5.6)	51.3	(± 6.0)	52.6	(± 6.7)
West Virginia	32.4	(± 8.1)	40.3	(± 8.1)	30.2	(± 7.9)	38.3	(± 5.3)	31.2	(± 5.3)	38.7	(± 5.6)	39.8	(± 7.0)
Wisconsin	53.8	(±10.7)	63.6	(±10.7)	42.5	(± 7.5)	52.1	(± 6.9)	48.0	(± 7.5)	61.9	(± 7.1)	48.2	(± 9.2)
Wyoming	43.6	(± 9.8)	54.3	(± 9.8)	41.4	(± 7.1)	56.8	(± 6.5)	42.5	(± 6.1)	54.3	(± 7.0)	58.1	(± 8.2)
Median	**44.3%**		**53.3%**		**37.2%**		**43.3%**		**40.3%**		**48.3%**		**46.3%**	
Range	**(26.9%–63.7%)**		**(15.3%–63.9%)**		**(22.7%–53.9%)**		**(24.7%–56.8%)**		**(26.8%–54.0%)**		**(17.4%–61.9%)**		**(30.6%–63.5%)**	

*n = 42,692.
†Confidence interval. CIs were calculated by multiplying the standard error by 1.96.
§Insufficient number of respondents.

TABLE 12. Percentage of adults aged ≥55 years who reported receiving influenza vaccination during the preceding 12 months, by state and age group — United States, Behavioral Risk Factor Surveillance System, 1997*

State	Age group (yrs) 55–64 %	55–64 (95% CI†)	65–74 %	65–74 (95% CI)	≥65 %	≥65 (95% CI)	≥75 %	≥75 (95% CI)	% Point difference from national objectives§
Alabama	37.7	(± 6.1)	57.3	(± 6.8)	62.6	(± 4.9)	70.9	(± 7.1)	2.6
Alaska	50.8	(±11.5)	59.6	(±13.3)	58.3	(±11.4)	54.0	(±21.8)	–1.7
Arizona	48.2	(± 8.6)	66.5	(± 7.6)	72.9	(± 5.4)	82.0	(± 6.9)	12.9
Arkansas	37.4	(± 6.8)	56.5	(± 7.1)	61.1	(± 5.3)	67.4	(± 7.8)	1.1
California	38.2	(± 5.2)	64.0	(± 5.1)	65.5	(± 3.8)	67.6	(± 5.6)	5.5
Colorado	54.7	(± 7.4)	72.4	(± 7.4)	74.4	(± 5.5)	78.3	(± 7.2)	14.4
Connecticut	36.0	(± 8.6)	62.9	(± 6.9)	67.2	(± 5.1)	73.8	(± 7.0)	7.2
Delaware	47.0	(± 6.3)	65.2	(± 5.4)	68.6	(± 4.2)	74.6	(± 6.2)	8.6
District of Columbia	31.9	(± 7.9)	55.9	(± 8.9)	54.3	(± 7.1)	51.7	(±10.8)	–5.7
Florida	31.4	(± 5.0)	62.7	(± 4.7)	62.3	(± 3.4)	61.8	(± 5.2)	2.3
Georgia	28.5	(± 6.2)	54.8	(± 7.2)	58.5	(± 5.8)	66.7	(± 9.0)	–1.5
Hawaii	42.7	(± 7.9)	68.7	(± 6.8)	71.1	(± 5.2)	74.8	(± 8.0)	11.1
Idaho	39.0	(± 6.0)	63.6	(± 4.7)	66.4	(± 3.5)	70.4	(± 5.2)	6.4
Illinois	39.5	(± 8.4)	67.4	(± 8.0)	67.8	(± 6.5)	68.5	(± 9.8)	7.8
Indiana	38.3	(± 6.3)	60.9	(± 6.9)	62.5	(± 5.2)	64.9	(± 8.1)	2.5
Iowa	42.2	(± 4.9)	67.1	(± 4.7)	69.7	(± 3.4)	72.9	(± 4.7)	9.7
Kansas	41.1	(± 7.0)	60.4	(± 7.0)	61.5	(± 5.2)	62.9	(± 7.6)	1.5
Kentucky	37.2	(± 4.9)	59.9	(± 4.9)	61.2	(± 3.7)	63.4	(± 5.6)	1.2
Louisiana	30.5	(± 6.8)	56.7	(± 7.9)	58.4	(± 6.1)	61.5	(±10.3)	–1.6
Maine	35.4	(± 7.0)	68.0	(± 7.6)	72.1	(± 5.4)	77.7	(± 7.4)	12.1
Maryland	37.7	(± 5.1)	63.7	(± 5.3)	63.4	(± 4.4)	62.9	(± 7.5)	3.4
Massachusetts	37.6	(± 8.7)	63.1	(± 8.0)	66.0	(± 6.0)	70.5	(± 8.7)	6.0
Michigan	33.3	(± 5.8)	61.3	(± 6.9)	63.6	(± 5.0)	66.7	(± 7.2)	3.6
Minnesota	43.5	(± 4.6)	64.9	(± 4.7)	69.0	(± 3.3)	73.9	(± 4.3)	9.0
Mississippi	38.2	(± 7.4)	57.4	(± 7.4)	61.1	(± 5.5)	67.3	(± 8.5)	1.1
Missouri	45.8	(± 7.2)	68.4	(± 6.7)	70.3	(± 5.0)	73.1	(± 7.6)	10.3
Montana	45.1	(± 7.2)	65.6	(± 7.4)	68.4	(± 5.4)	72.3	(± 7.3)	8.4
Nebraska	51.0	(± 6.7)	61.0	(± 6.0)	65.8	(± 4.1)	71.5	(± 5.4)	5.8
Nevada	36.7	(± 9.0)	48.7	(±12.1)	56.5	(±10.2)	76.8	(±15.1)	–3.5
New Hampshire	35.9	(± 8.7)	58.5	(± 8.2)	64.6	(± 6.2)	74.6	(± 8.7)	4.6
New Jersey	34.4	(± 6.4)	60.2	(± 6.3)	60.7	(± 4.8)	61.6	(± 7.5)	0.7

New Mexico	33.8	(± 7.0)	70.0	(± 6.5)	72.8	(± 4.9)	77.7	(± 7.0)	12.8
New York	32.7	(± 5.4)	61.6	(± 5.7)	64.5	(± 4.2)	68.8	(± 6.1)	4.5
North Carolina	35.4	(± 4.9)	64.0	(± 5.0)	64.6	(± 3.8)	65.6	(± 5.7)	4.6
North Dakota	34.3	(± 7.0)	62.8	(± 6.9)	64.8	(± 4.8)	67.3	(± 6.6)	4.8
Ohio	33.7	(± 5.8)	62.2	(± 5.3)	65.4	(± 4.1)	71.6	(± 6.7)	5.4
Oklahoma	47.0	(± 7.5)	68.0	(± 5.0)	69.3	(± 4.2)	73.1	(± 7.5)	9.3
Oregon	46.2	(± 5.5)	66.5	(± 5.6)	69.8	(± 4.1)	75.1	(± 5.4)	9.8
Pennsylvania	30.1	(± 4.8)	62.1	(± 5.1)	65.8	(± 3.8)	71.5	(± 5.6)	5.8
Rhode Island	35.4	(± 7.2)	65.8	(± 7.1)	67.7	(± 5.3)	70.8	(± 7.6)	7.7
South Carolina	39.9	(± 6.3)	71.3	(± 5.4)	74.3	(± 4.2)	80.0	(± 6.0)	14.3
South Dakota	46.6	(± 7.3)	66.6	(± 6.3)	65.6	(± 4.5)	64.3	(± 6.3)	5.6
Tennessee	46.8	(± 5.7)	67.6	(± 5.5)	69.1	(± 4.1)	71.4	(± 6.1)	9.1
Texas	38.6	(± 6.3)	66.8	(± 6.7)	68.0	(± 5.2)	70.1	(± 8.0)	8.0
Utah	36.2	(± 7.3)	58.1	(± 8.1)	66.1	(± 5.6)	76.3	(± 7.2)	6.1
Vermont	40.0	(± 5.6)	65.6	(± 5.5)	69.5	(± 4.1)	75.0	(± 5.9)	9.5
Virginia	38.4	(± 6.3)	65.2	(± 6.2)	67.7	(± 4.8)	72.2	(± 7.6)	7.7
Washington	40.0	(± 5.5)	66.9	(± 5.5)	70.2	(± 4.0)	74.8	(± 5.6)	10.2
West Virginia	37.8	(± 5.7)	55.9	(± 5.9)	58.2	(± 4.4)	62.2	(± 6.8)	–1.8
Wisconsin	31.4	(± 7.0)	59.8	(± 7.2)	66.1	(± 5.3)	76.8	(± 6.9)	6.1
Wyoming	50.4	(± 6.2)	70.5	(± 6.4)	72.4	(± 4.8)	75.6	(± 7.0)	12.4
Median	**38.2%**		**63.6%**		**66.0%**		**71.4%**		
Range	**(28.5%–54.7%)**		**(48.7%–72.4%)**		**(54.3%–74.4%)**		**(51.7%–82.0%)**		

*n = 41,115.
†Confidence interval. CIs were calculated by multiplying the standard error by 1.96.
§*Healthy People 2000* objective to increase influenza vaccination rates to ≥60% among persons aged ≥65 years.

TABLE 13. Percentage of adults aged ≥55 years who reported ever receiving pneumococcal vaccination, by state and age group — United States, Behavioral Risk Factor Surveillance System, 1997*

State	Age group (yrs)								% Point difference from national objectives§
	55–64		65–74		≥65		≥75		
	%	(95% CI†)	%	(95% CI)	%	(95% CI)	%	(95% CI)	
Alabama	20.3	(± 5.0)	45.5	(± 6.7)	47.5	(± 5.2)	50.6	(± 8.4)	–12.5
Alaska	30.7	(±10.6)	36.6	(±12.6)	39.2	(±11.0)	48.1	(±21.8)	–20.8
Arizona	20.2	(± 6.3)	56.9	(± 8.0)	59.4	(± 6.1)	63.1	(± 8.6)	–0.6
Arkansas	16.2	(± 5.3)	33.8	(± 7.0)	39.1	(± 5.4)	46.1	(± 8.3)	–20.9
California	22.7	(± 4.7)	44.6	(± 5.3)	49.8	(± 4.0)	57.8	(± 6.0)	–10.2
Colorado	17.8	(± 5.7)	50.4	(± 7.9)	53.3	(± 6.1)	58.9	(± 9.1)	–6.7
Connecticut	13.1	(± 4.8)	38.6	(± 6.8)	43.0	(± 5.4)	49.7	(± 8.4)	–17.0
Delaware	15.7	(± 4.2)	48.4	(± 6.1)	52.6	(± 4.7)	60.1	(± 7.0)	–7.4
District of Columbia	16.0	(± 6.3)	30.4	(± 8.3)	32.3	(± 6.7)	35.4	(±10.7)	–27.7
Florida	15.1	(± 4.1)	42.6	(± 4.7)	45.5	(± 3.5)	49.2	(± 5.2)	–14.5
Georgia	18.4	(± 5.3)	43.3	(± 7.2)	48.5	(± 5.7)	60.0	(± 9.2)	–11.5
Hawaii	20.3	(± 6.5)	47.1	(± 7.7)	51.7	(± 5.9)	59.2	(± 9.4)	–8.3
Idaho	16.4	(± 3.5)	44.3	(± 5.0)	50.2	(± 3.8)	58.6	(± 5.5)	–9.8
Illinois	17.2	(± 6.3)	46.7	(± 8.2)	44.7	(± 6.6)	40.8	(±10.5)	–15.3
Indiana	12.4	(± 4.1)	36.2	(± 7.1)	38.0	(± 5.4)	40.7	(± 8.1)	–22.0
Iowa	19.1	(± 3.9)	44.9	(± 5.3)	51.5	(± 3.9)	59.4	(± 5.4)	–8.5
Kansas	17.1	(± 5.4)	37.8	(± 7.0)	43.7	(± 5.3)	52.2	(± 7.8)	–16.3
Kentucky	14.1	(± 3.4)	37.7	(± 5.0)	38.6	(± 3.7)	40.1	(± 5.4)	–21.4
Louisiana	19.1	(± 6.7)	32.7	(± 7.4)	32.2	(± 5.8)	31.4	(± 9.4)	–27.8
Maine	21.7	(± 6.8)	45.3	(± 7.5)	50.0	(± 5.7)	56.7	(± 8.8)	–10.0
Maryland	10.8	(± 3.1)	38.1	(± 5.5)	41.0	(± 4.4)	46.6	(± 7.1)	–19.0
Massachusetts	14.2	(± 6.4)	46.0	(± 8.3)	52.7	(± 6.3)	62.9	(± 9.1)	–7.3
Michigan	12.7	(± 4.0)	41.6	(± 7.0)	45.6	(± 5.2)	51.0	(± 7.7)	–14.4
Minnesota	18.9	(± 3.5)	43.3	(± 4.9)	48.3	(± 3.5)	54.4	(± 5.0)	–11.7
Mississippi	25.8	(± 7.2)	41.3	(± 7.7)	45.9	(± 6.0)	53.7	(± 9.4)	–14.1
Missouri	17.8	(± 5.8)	41.3	(± 7.2)	44.3	(± 5.7)	48.8	(± 8.7)	–15.7
Montana	18.4	(± 5.5)	44.0	(± 7.7)	50.8	(± 5.9)	60.5	(± 7.9)	–9.2
Nebraska	20.7	(± 6.0)	46.1	(± 6.3)	49.8	(± 4.4)	54.2	(± 6.0)	–10.2
Nevada	24.0	(± 8.3)	43.5	(±11.8)	53.5	(±10.4)	79.0	(±12.0)	–6.5
New Hampshire	13.9	(± 6.1)	44.5	(± 8.2)	49.6	(± 6.5)	58.8	(±10.2)	–10.4

New Jersey	10.8	(± 4.0)	30.1	(± 5.8)	33.9	(± 4.6)	40.4	(± 7.6)	–26.1
New Mexico	11.2	(± 4.4)	49.4	(± 7.0)	50.1	(± 5.7)	51.3	(± 9.6)	–9.9
New York	9.5	(± 3.2)	37.1	(± 5.9)	38.9	(± 4.5)	41.9	(± 6.8)	–21.1
North Carolina	19.7	(± 4.4)	48.2	(± 5.1)	50.6	(± 3.9)	55.4	(± 6.1)	–9.4
North Dakota	17.0	(± 5.7)	36.6	(± 6.6)	40.8	(± 4.8)	46.2	(± 7.1)	–19.2
Ohio	13.6	(± 4.3)	33.4	(± 5.5)	38.5	(± 4.5)	48.9	(± 7.4)	–21.5
Oklahoma	24.3	(± 6.7)	34.6	(± 5.0)	40.4	(± 4.3)	56.2	(± 7.8)	–19.6
Oregon	17.6	(± 4.5)	52.2	(± 5.8)	55.9	(± 4.3)	61.7	(± 6.3)	–4.1
Pennsylvania	14.4	(± 3.9)	42.3	(± 5.3)	47.1	(± 4.1)	54.6	(± 6.7)	–12.9
Rhode Island	13.1	(± 5.2)	36.5	(± 7.2)	43.0	(± 5.6)	53.3	(± 8.6)	–17.0
South Carolina	14.8	(± 4.7)	37.7	(± 6.1)	41.6	(± 4.8)	48.8	(± 7.9)	–18.4
South Dakota	18.7	(± 5.2)	39.5	(± 6.3)	40.6	(± 4.5)	42.2	(± 6.4)	–19.4
Tennessee	15.6	(± 4.2)	44.8	(± 6.1)	45.0	(± 4.5)	45.4	(± 6.5)	–15.0
Texas	15.7	(± 4.7)	42.0	(± 7.1)	44.4	(± 5.6)	48.5	(± 9.2)	–15.6
Utah	18.1	(± 6.0)	41.5	(± 8.3)	48.5	(± 6.2)	57.6	(± 8.8)	–11.5
Vermont	16.9	(± 4.3)	47.9	(± 5.9)	51.6	(± 4.5)	56.9	(± 7.0)	–8.4
Virginia	18.2	(± 5.6)	48.4	(± 7.2)	53.6	(± 5.6)	63.0	(± 8.7)	–6.4
Washington	15.3	(± 4.1)	46.5	(± 5.9)	51.6	(± 4.5)	58.5	(± 6.7)	–8.4
West Virginia	21.4	(± 4.7)	35.8	(± 5.5)	41.3	(± 4.4)	51.2	(± 6.8)	–18.7
Wisconsin	14.1	(± 5.0)	39.1	(± 7.3)	42.6	(± 5.7)	48.6	(± 9.3)	–17.4
Wyoming	22.1	(± 5.1)	45.2	(± 7.0)	50.9	(± 5.4)	60.2	(± 8.1)	–9.1
Median	**17.1%**		**42.6%**		**45.9%**		**53.3%**		
Range	**(9.5%–30.7%)**		**(30.1%–56.9%)**		**(32.2%–59.4%)**		**(31.4%–79.0%)**		

*n = 40,137.
†Confidence interval. CIs were calculated by multiplying the standard error by 1.96.
§*Healthy People 2000* objective to increase pneumococcal vaccination rates to ≥60% among persons aged ≥65 years.

Dental Services

According to the BRFSS data, the percentage of persons aged ≥65 years who had visited a dentist during the preceding 12 months ranged from 39.7% in Oklahoma to 75.4% in Hawaii (median: 59.1%) (Table 14). Overall, use of dental services decreased with advancing age, from a median of 67.5% among persons aged 55–64 years to 63.0% among persons aged 65–74 years and to 56.1% among persons aged ≥75 years. Of the 46 states with data on adult dental visits, 22 (48%) reported that ≥60% of persons aged ≥65 years had obtained dental services during the preceding 12 months, which is the *Healthy People 2000* objective (objective 13.14). In seven states (15%), fewer than 50% of persons aged ≥65 years visited a dentist during the preceding 12 months. Five of these states were located in the South. In 15 states (33%), fewer than 50% of persons aged ≥75 years visited a dentist during the preceding 12 months.

Lack of dental insurance coverage was more common among persons aged ≥65 years (median: 73.8%) than among those aged 55–64 years (median: 48.1%) (Table 15). In every state except Hawaii, >50% of persons aged ≥65 years reported not having dental insurance. In all 46 states included in this analysis, most persons aged ≥75 years reported not having dental insurance coverage (median: 79.8%). In 31 states (67%), ≥75% of persons in this age group reported not having dental care coverage.

DISCUSSION

Access to and Use of Health-Care Services

Ensuring access to the full range of medical and dental services is critical to both the duration and quality of life for older adults living in the United States. This report examines barriers to health care (e.g., cost and the lack of a regular source of care). Overall, cost is not a major barrier to care for most older adults, although certain factors (e.g., race/ethnicity, educational attainment, and income) can increase a person's chances of deferring care because of cost. Although out-of-pocket expenses (i.e., copayments and deductibles) can be a burden for some Medicare beneficiaries who cannot afford supplemental or Medi-gap insurance (*7*), MCBS data indicate that few Medicare beneficiaries have problems receiving care or prescribed medications for any reason. A slightly higher percentage of persons reported not being satisfied with the ease of getting to a doctor, which might reflect age-related transportation difficulties (e.g., persons who no longer drive and are dependent on friends and relatives or on public transportation).

Most persons aged ≥55 years also reported having a regular source of care. Research has demonstrated that persons with any type of regular source of health care have better access to care than those without a regular source, as measured by a set of preventive and primary-care use indicators (*5*). Because persons with a regular source of care are more likely to access primary-care services, the rates of persons receiving routine checkups and the rates of persons who have a regular source of care should be similar. However, state- and age-specific estimates of the percentage of persons aged ≥55 years reporting a routine check-up during the preceding 2 years is lower than the national estimates of persons with a regular source of care. One reason could be that respondents who receive care of some chronic condition(s) might have

TABLE 14. Percentage of adults aged ≥55 years who reported a dental visit during the preceding 12 months, by state and age group — United States, Behavioral Risk Factor Surveillance System (BRFSS), 1995–1997*†

	Age group (yrs)							
	55–64		≥65		65–74		≥75	
State	%	(95% CI§)	%	(95% CI)	%	(95% CI)	%	(95% CI)
Alabama¶††	61.7	(± 4.9)	50.4	(± 4.1)	50.8	(± 5.1)	49.6	(± 6.5)
Alaska¶	61.7	(±12.5)	75.0	(±10.1)	79.4	(±10.6)	58.1	(±20.0)
Arizona¶**	67.5	(± 5.9)	67.6	(± 4.2)	69.3	(± 5.3)	65.0	(± 6.5)
Arkansas¶	59.6	(± 6.7)	47.6	(± 5.5)	54.1	(± 7.3)	37.5	(± 7.8)
California¶††	70.5	(± 3.7)	68.1	(± 2.9)	68.7	(± 3.7)	67.0	(± 4.3)
Colorado††	67.0	(± 7.4)	65.6	(± 5.9)	69.4	(± 7.6)	58.2	(± 9.2)
Connecticut**	76.6	(± 6.9)	69.1	(± 5.6)	69.6	(± 7.4)	68.4	(± 8.6)
Florida††	70.2	(± 5.1)	65.8	(± 3.3)	68.2	(± 4.3)	62.7	(± 5.1)
Georgia¶	59.9	(± 7.6)	49.7	(± 5.1)	49.7	(± 5.9)	49.8	(±10.2)
Hawaii**	86.5	(± 5.5)	75.4	(± 5.4)	75.3	(± 6.7)	75.6	(± 9.0)
Idaho¶††	65.9	(± 3.7)	59.1	(± 2.9)	61.8	(± 3.7)	55.3	(± 4.5)
Illinois¶**	71.2	(± 5.5)	61.0	(± 4.7)	61.4	(± 6.1)	60.3	(± 7.6)
Indiana¶**††	61.0	(± 3.7)	52.8	(± 3.0)	54.8	(± 3.9)	49.8	(± 4.5)
Iowa¶	67.3	(± 5.1)	61.0	(± 3.8)	62.8	(± 5.3)	58.7	(± 5.7)
Kansas**	68.5	(± 7.4)	56.8	(± 5.1)	63.6	(± 6.9)	47.8	(± 7.6)
Kentucky**	57.1	(± 7.3)	41.2	(± 5.3)	44.3	(± 6.9)	35.9	(± 7.8)
Louisiana**	50.4	(± 7.8)	47.2	(± 6.0)	50.8	(± 7.4)	40.1	(± 9.0)
Maine¶	56.5	(± 8.0)	47.7	(± 6.4)	50.5	(± 8.0)	43.1	(± 9.8)
Maryland††	67.7	(± 7.3)	62.0	(± 6.2)	60.9	(± 7.6)	63.9	(±10.6)
Massachusetts¶	73.3	(± 7.1)	58.9	(± 6.0)	63.8	(± 7.4)	49.3	(± 9.8)
Michigan**	76.4	(± 5.5)	63.9	(± 5.3)	63.2	(± 6.7)	65.2	(± 8.4)
Mississippi††	51.8	(± 7.8)	50.1	(± 6.1)	55.1	(± 8.0)	42.1	(± 9.4)
Missouri††	58.7	(± 6.9)	58.7	(± 5.4)	60.2	(± 7.1)	56.3	(± 8.4)
Montana¶**††	65.0	(± 4.5)	61.1	(± 3.3)	64.1	(± 4.3)	56.8	(± 5.1)
Nebraska**	67.1	(± 6.5)	62.5	(± 3.5)	65.9	(± 6.1)	57.2	(± 6.9)
Nevada**††	58.8	(± 6.9)	58.0	(± 6.6)	57.0	(± 7.8)	61.2	(±11.6)
New Hampshire**	70.4	(± 7.8)	63.9	(± 6.3)	67.9	(± 7.6)	55.9	(±10.4)
New Jersey**††	71.2	(± 4.3)	65.5	(± 3.2)	67.0	(± 4.3)	62.8	(± 5.1)
New Mexico††	69.9	(± 6.7)	64.0	(± 5.3)	65.7	(± 6.9)	61.1	(± 9.0)
New York¶††	73.2	(± 4.1)	62.5	(± 3.5)	65.7	(± 4.3)	57.1	(± 5.5)
North Dakota¶	71.8	(± 7.3)	55.8	(± 5.0)	63.2	(± 6.7)	44.8	(± 7.1)
Ohio¶††	70.0	(± 5.1)	57.8	(± 3.8)	60.6	(± 4.9)	52.8	(± 6.5)
Oklahoma**	62.5	(± 7.3)	39.7	(± 4.4)	40.3	(± 5.5)	38.4	(± 6.9)
Oregon¶	69.1	(± 5.9)	66.7	(± 4.1)	68.5	(± 5.3)	63.6	(± 6.7)
Pennsylvania**	65.8	(± 5.1)	57.2	(± 3.9)	61.1	(± 4.9)	49.0	(± 6.7)
Rhode Island¶	69.6	(± 6.9)	55.5	(± 5.7)	57.9	(± 7.6)	51.8	(± 8.6)
South Dakota**	74.2	(± 6.1)	54.3	(± 4.3)	56.7	(± 6.5)	51.2	(± 6.5)
Tennessee††	62.0	(± 5.5)	52.1	(± 4.8)	56.9	(± 6.1)	44.8	(± 7.3)
Texas¶**	64.2	(± 5.7)	57.2	(± 4.8)	58.5	(± 5.9)	54.8	(± 7.8)
Utah¶**††	73.9	(± 3.7)	63.2	(± 3.2)	66.0	(± 4.1)	59.4	(± 4.9)
Vermont¶	67.5	(± 5.9)	57.7	(± 5.0)	59.8	(± 6.5)	54.4	(± 6.5)
Virginia¶**††	68.4	(± 3.9)	63.5	(± 3.6)	65.9	(± 4.3)	58.6	(± 6.3)
Washington¶	70.1	(± 4.9)	63.3	(± 4.8)	65.1	(± 6.5)	60.2	(± 7.1)
West Virginia††	47.4	(± 5.9)	43.4	(± 4.5)	46.0	(± 5.9)	38.9	(± 6.9)
Wisconsin¶	74.1	(± 6.7)	72.1	(± 5.0)	76.8	(± 6.3)	64.3	(± 8.4)
Wyoming¶	62.6	(± 6.3)	59.1	(± 5 2)	66.1	(± 6.3)	46.6	(± 8.4)
Median	**67.5%**		**59.1%**		**63.0%**		**56.1%**	
Range	**(47.4%–86.5%)**		**(39.7%–75.4%)**		**(40.3%–79.4%)**		**(35.9%–75.6%)**	

*n = 44,872.

†For states in which data were collected during >1 year, analysis was conducted by merging data for multiple years. Data are presented for the 46 states that had administered the BRFSS Oral Health Module at least once during 1995–1997.

§Confidence interval. CIs were calculated by multiplying the standard error by 1.96.

¶Data from 1995 BRFSS.

**Data from 1996 BRFSS.

††Data from 1997 BRFSS.

TABLE 15. Percentage of adults aged ≥55 years who reported having no dental insurance, by state and age group — United States, Behavioral Risk Factor Surveillance System (BRFSS), 1995–1997*†

State	Age group (yrs)							
	55–64		≥65		65–74		≥75	
	%	(95% CI§)	%	(95% CI)	%	(95% CI)	%	(95% CI)
Alabama¶††	55.0	(± 5.1)	73.0	(± 3.6)	70.9	(± 4.7)	77.0	(± 5.5)
Alaska¶	41.8	(±12.3)	50.8	(±15.9)	45.3	(±18.8)	73.7	(±15.1)
Arizona ¶**	42.5	(± 5.9)	57.5	(± 4.4)	57.2	(± 5.9)	58.0	(± 6.5)
Arkansas¶	62.3	(± 7.1)	83.9	(± 4.1)	84.2	(± 4.9)	83.5	(± 6.1)
California¶††	44.8	(± 3.9)	50.3	(± 3.1)	44.7	(± 4.1)	59.1	(± 4.7)
Colorado††	44.5	(± 7.6)	67.8	(± 5.9)	67.3	(± 7.6)	68.9	(± 8.8)
Connecticut**	32.7	(± 7.4)	71.7	(± 5.5)	62.7	(± 8.0)	84.8	(± 6.5)
Florida††	58.7	(± 5.5)	63.8	(± 3.4)	59.0	(± 4.7)	70.0	(± 4.7)
Georgia¶	48.6	(± 7.6)	61.7	(± 4.9)	58.1	(± 5.7)	73.7	(± 9.0)
Hawaii**	18.4	(± 5.7)	41.3	(± 5.9)	36.5	(± 6.9)	50.6	(±10.6)
Idaho¶††	48.7	(± 4.1)	81.9	(± 2.3)	80.6	(± 3.1)	83.7	(± 3.3)
Illinois¶**††	48.9	(± 6.1)	71.9	(± 4.6)	71.7	(± 6.1)	72.2	(± 7.1)
Indiana¶**††	47.2	(± 3.7)	73.0	(± 2.7)	69.1	(± 3.7)	78.8	(± 3.7)
Iowa¶	47.5	(± 5.5)	80.6	(± 2.9)	80.0	(± 4.1)	81.6	(± 4.1)
Kansas**	42.7	(± 7.8)	68.8	(± 4.7)	66.1	(± 6.5)	72.6	(± 6.7)
Kentucky**	58.0	(± 7.6)	86.5	(± 3.6)	83.2	(± 4.9)	92.1	(± 4.3)
Louisiana**	62.8	(± 8.2)	81.7	(± 4.5)	78.5	(± 6.1)	87.7	(± 5.5)
Maine¶	67.2	(± 7.8)	84.0	(± 4.6)	80.8	(± 6.5)	89.2	(± 6.1)
Maryland††	42.1	(± 7.8)	58.6	(± 6.2)	51.6	(± 7.6)	70.6	(± 9.2)
Massachusetts¶	51.2	(± 8.0)	80.5	(± 4.8)	79.7	(± 6.1)	82.1	(± 7.6)
Michigan**	29.8	(± 5.7)	53.7	(± 5.6)	49.8	(± 7.3)	61.1	(± 9.0)
Mississippi††	62.0	(± 7.1)	81.2	(± 4.8)	80.2	(± 6.3)	83.1	(± 7.4)
Missouri††	53.7	(± 6.9)	76.8	(± 4.5)	72.1	(± 6.5)	84.1	(± 5.5)
Montana¶**††	55.3	(± 4.7)	82.7	(± 2.5)	83.3	(± 3.1)	81.9	(± 4.1)
Nebraska**	55.4	(± 6.9)	82.6	(± 3.7)	78.1	(± 5.5)	89.5	(± 4.3)
Nevada**††	38.1	(± 6.5)	55.1	(± 6.8)	52.1	(± 7.8)	64.2	(±12.3)
New Hampshire**	52.7	(± 9.2)	78.9	(± 5.4)	78.0	(± 6.7)	80.7	(± 9.0)
New Jersey**††	41.6	(± 4.5)	67.9	(± 3.2)	63.8	(± 4.3)	75.2	(± 4.7)
New Mexico††	45.8	(± 7.1)	67.9	(± 5.7)	68.3	(± 7.3)	67.1	(± 9.4)
New York¶**††	45.1	(± 4.5)	66.9	(± 3.5)	63.8	(± 4.5)	72.3	(± 5.1)
North Dakota¶	65.2	(± 7.8)	87.7	(± 3.2)	87.0	(± 4.5)	88.7	(± 4.5)
Ohio¶††	47.0	(± 5.5)	73.9	(± 3.5)	72.6	(± 4.3)	76.3	(± 6.1)
Oklahoma**	57.6	(± 7.1)	81.9	(± 3.4)	80.7	(± 4.3)	84.7	(± 5.3)
Oregon¶	36.5	(± 5.9)	73.7	(± 4.0)	69.7	(± 5.5)	80.8	(± 5.7)
Pennsylvania**	44.9	(± 5.3)	70.8	(± 3.7)	68.5	(± 4.7)	75.9	(± 5.7)
Rhode Island¶	42.1	(± 7.4)	76.8	(± 5.0)	73.7	(± 6.9)	81.6	(± 6.9)
South Dakota**	58.7	(± 6.7)	88.1	(± 3.3)	84.6	(± 5.1)	92.4	(± 3.5)
Tennessee††	56.2	(± 5.9)	81.6	(± 3.6)	81.4	(± 4.7)	81.9	(± 5.7)
Texas¶**	57.9	(± 6.1)	72.6	(± 4.4)	72.6	(± 5.5)	72.6	(± 7.1)
Utah¶**††	40.7	(± 4.1)	71.0	(± 3.1)	66.0	(± 4.3)	77.6	(± 4.1)
Vermont¶	51.7	(± 6.5)	78.6	(± 4.1)	75.1	(± 5.7)	84.5	(± 5.5)
Virginia¶**††	45.9	(± 4.3)	73.0	(± 3.4)	71.2	(± 4.3)	76.6	(± 5.5)
Washington¶	46.2	(± 5.5)	77.6	(± 4.2)	76.9	(± 5.5)	78.8	(± 6.1)
West Virginia††	70.3	(± 5.3)	86.2	(± 3.1)	84.7	(± 4.1)	89.0	(± 4.5)
Wisconsin¶	38.2	(± 7.4)	81.4	(± 4.6)	79.4	(± 6.3)	84.9	(± 6.1)
Wyoming¶	53.3	(± 6.3)	76.4	(± 4.4)	71.5	(± 6.1)	85.2	(± 5.7)
Median	**48.1%**		**73.8%**		**71.9%**		**79.8%**	
Range	**(18.4%–70.3%)**		**(41.3%–88.1%)**		**(36.5%–87.0%)**		**(50.6%–92.4%)**	

*n = 44,872.

†For states in which data were collected during >1 year, analysis was conducted by merging data for multiple years. Data are presented for the 46 states that had administered the BRFSS Oral Health Module at least once during 1995–1997.

§Confidence interval. CIs were calculated by multiplying the standard error by 1.96.

¶Data from 1995 BRFSS.

**Data from 1996 BRFSS.

††Data from 1997 BRFSS.

underreported this factor, although they receive regular preventive care as part of their routine visits.

Screening

Numerous health reports have emphasized the importance of primary, secondary, and tertiary screening of older adults to prevent, delay, or minimize disease, risk factors, preexisting conditions, and disability and to enhance both health status and quality of life (*2,32*). Thus, USPSTF and other organizations (e.g., ACP and ACS) have published age-specific guidelines for delivery of preventive services to persons aged ≥65 years (*8*). Screening for cardiovascular disease (CVD) and its risk factors is particularly important among older adults. The percentage of hypertension, an important risk factor for CVD, increases with age, and treatment has been demonstrated to be effective for all adults, including persons aged ≥55 years (*2*). Regular screening for hypertension is recommended for all adults aged ≥21 years (*8*). The relation between cholesterol and CVD is supported by clinical and epidemiologic studies (*33*), and regular screening is recommended for persons who are middle-aged or at high risk for disease (*8,10*). Although the relation between lipid-lowering therapies and morbidity and mortality among older adults is less conclusive than for younger adults, evidence indicates that cholesterol reduction could be effective for older adults (*34*). Both USPSTF and ACP suggest that individualized screening and treatment is appropriate for persons aged 65–75 years who are healthy but at high risk for disease (*8,2,35*). NCEP II recommends routine measurement of nonfasting total cholesterol and HDL-C levels in adults aged ≥20 years every 5 years (*10*). Consistent with these recommendations, the state- and age-specific percentage estimates for blood pressure screening are high (median: >95% for adults aged ≥55 years). However, rates are lower for blood cholesterol checks, which vary from 85% to 90% for adults aged ≥55 years.

In 1991, *Healthy People 2000* set objectives for increasing the use and timeliness of cancer screening procedures (*1*). Several federal initiatives have been developed in recent years for breast and cervical cancer screening. Breast cancer is the most common malignancy among women and is second only to lung cancer as the leading cause of cancer deaths (*11*). In the United States, the incidence of breast cancer increased rapidly during 1973–1990 but remained stable during 1991–1995 (*36*). The death rate from breast cancer, which had been on the rise, has decreased 5.3% among white women but increased 0.6% among black women during 1991–1995 (*36,37*). Breast cancer screening has been demonstrated to reduce mortality in women aged 50–69 years (*8,38,39*). Most recommendations suggest screening women in this age group with a mammogram and a clinical breast examination every 1–2 years. Less consensus exists regarding continued screening among women aged ≥70 years because of the lack of data on screening effectiveness for this age group. However, both breast cancer incidence and mortality increase substantially with advancing age (*37,40*). Despite this, the results reported in this publication indicate that breast cancer screening is less common among women aged ≥65 years, compared with women aged 55–64 years.

During 1973–1995, the incidence of cervical cancer declined 43.3% overall and 52.0% among women aged ≥65 years, whereas the mortality rate declined 45.9% overall and 50.0% among women aged ≥65 years (*37*). Much of this reduction has been

associated with increased use of Pap tests, although the effectiveness of this test for reducing cervical cancer mortality has only been evaluated in observational studies, not in randomized clinical trials (*41*). Pap tests can detect asymptomatic precancerous lesions (i.e., dysplasia), as well as preinvasive lesions that can progress to invasive cervical cancer if untreated (*41*). Detection and treatment of precancerous and preinvasive lesions can reduce the risk for developing invasive cervical cancer (*42*) and thereby improve the prognosis for women diagnosed with these conditions. An estimated 37%–60% reduction in cervical cancer mortality could be achieved with regular screening for all women (*43*). Thus, USPSTF, ACS, ACP, and other health organizations recommend Pap tests for all sexually active women aged ≤65 years who have a cervix. USPSTF states that testing can be discontinued after age 65 years if previous screenings have been negative. However, older women are more often diagnosed at later stages of disease and are more likely to die from the disease than younger women (*1*). They also are less likely than younger women to have ever received screening. Furthermore, the 5-year survival rate is 57.0% among women aged 65–74 years and 45.7% among women aged ≥75 years, compared with 61.4% among women aged 55–64 years (*11*). For these reasons, older women could benefit from timely cervical cancer screening (*11*).

Comparing this report's findings on Pap tests with reports during 1988–1989 indicates that the proportion of women who reported ever receiving a Pap test and the proportion who reported receiving a test during the preceding 3 years have not changed substantially in the past decade (*1,44,45*). In this report, approximately 83% of women aged 55–64 years reported receiving a Pap test during the preceding 3 years, which suggests that more progress has been made toward achieving the *Healthy People 2000* objective (objective 16.12) among this age group (95%) than among women aged ≥75 years (median: 58%).

Colorectal cancer is the second leading cause of cancer-related death and the third most commonly diagnosed cancer for both men and women in the United States (*11*). The risk for developing colorectal cancer increases with advancing age, and the risk is higher among men than women (*37,12*). Overall, colorectal cancer incidence decreased 7.4% during 1973–1995. During the same period, incidence decreased 5.3% among males and 10.4% among females, 9.6% among persons aged <65 years, and 6.1% among persons aged ≥65 years (*37*). However, the incidence among blacks of both sexes, especially males, has increased and exceeds the rate among whites. Although the colorectal cancer mortality rate decreased 20.8% among the general population during 1973–1995, mortality increased 26.1% among black males aged ≥65 years and 15.6% among black males aged <65 years (*37*). Overall mortality is considerably higher among blacks than whites.

Recent research has demonstrated that screening to detect colorectal cancer early reduces mortality (*13*). Current technology also allows curative excision of early-stage colorectal cancers during the screening procedure. The 5-year survival rate for persons with localized disease is approximately 91%. However, only 37% of colorectal cancers are diagnosed at a localized stage. The 5-year survival rate is reduced to 34% for persons with regional-stage disease and to 8% for those with advanced-stage disease.

ACS recommends screening all persons aged ≥50 years who are at average risk for disease, using one of the following methods: a) annual FOBT plus flexible

sigmoidoscopy every 5 years, b) total colon exam by either colonoscopy every 10 years, or c) double-contrast barium enema every 5–10 years (*12*). ACS also recommends a digital rectal exam with sigmoidoscopy or colonoscopy. An interdisciplinary task force supported by five major gastroenterological professional societies has released similar guidelines (*13*). In 1996, USPSTF revised its clinical preventive services guidelines (*8,12*) following the results of a randomized clinical trial that demonstrated a 33% reduction in colorectal cancer mortality among persons advised to have annual FOBT, compared with controls. USPSTF now recommends annual FOBT beginning at age 50 years and recommends sigmoidoscopic screening but does not specify how often.

The 1997 BRFSS data demonstrate that screening rates for colorectal cancer among older adults are lower than those for breast and cervical cancers, a finding that is consistent with earlier reports (*13,46,47*). Trends for FOBT are difficult to estimate because the 1997 BRFSS question was changed to apply to home test kits only. Approximately 28% of persons aged ≥55 years reported having FOBT using a home kit during the preceding 2 years, which is less than the *Healthy People 2000* objective of 50% (objective 16.13). Approximately 40% of persons aged ≥55 years reported ever having proctoscopy or sigmoidoscopy, which is consistent with the *Healthy People 2000* objective (objective 16.13). However, the BRFSS questionnaire does not distinguish between tests conducted for diagnosis and those conducted for screening, resulting in a likely overestimate of the actual percentage of screening (*47*). This might explain why persons aged 65–74 years have the highest screening rates, followed by persons aged ≥75 years.

These results reflect varying degrees of progress toward achieving national objectives for cancer screening. Data suggest major strides in increasing the proportion of women who receive timely breast and cervical cancer screening, although the numbers are still lower for older women, despite Medicare coverage for these services since 1991. Ongoing programs (e.g., CDC's National Breast and Cervical Cancer Early Detection Program) designed to promote screening, follow-up, and referral for medically underserved women should be broadened to include older women. Colorectal cancer screening has been slow to gain acceptance among both patients and health-care providers, and similar efforts might be required to support and encourage delivery and use of this clinical preventive service.

Vaccination

This report indicates that in 1997, influenza vaccination coverage exceeded the *Healthy People 2000* objective of 60% (objective 20.11) in 38 states among persons aged 65–74 years and in all states except Alaska among persons aged ≥75 years. Among persons aged ≥65 years, only five states and the District of Columbia had coverage levels <60%.

Among persons aged 65–74 years and ≥65 years, no state met or exceeded the *Healthy People 2000* objective of 60% pneumococcal vaccination coverage (objective 20.11). Among persons aged ≥75 years, pneumococcal vaccination coverage exceeded the 60% objective in nine states.

Persons aged ≥75 years were more likely than persons aged 65–74 years to report receiving influenza and pneumococcal vaccinations or better health care that impacts

survival. Increased age might represent increased opportunity for patient encounters with the health-care system, increased offers for vaccination by providers, and increased perception of need for vaccination by both patients and providers. Awareness of the need for routine vaccination should be increased among health-care providers and all persons aged ≥65 years.

Low vaccination rates among persons aged 55–64 years could reflect the lack of routine vaccination recommendations for this population in 1997 and the lack of Medicare coverage, which does not begin until age 65 years. Among persons aged 55–64 years, influenza vaccination is particularly recommended for the following groups: a) residents of nursing homes or other chronic care facilities that house persons of any age with chronic medical conditions; b) persons with chronic disorders of the pulmonary or cardiovascular system; c) persons who required regular medical follow-up or hospitalization during the preceding year because of chronic metabolic diseases (including diabetes mellitus), renal dysfunction, or hemoglobinopathies; d) persons with immunosuppression, including those infected with the human immunodeficiency virus (HIV); and e) persons who care for or live with persons at high risk for complications of influenza (*15*).

Pneumococcal vaccination is recommended for the following groups of persons aged 2–64 years: a) those with chronic cardiovascular disease, chronic pulmonary disease (i.e., chronic obstructive pulmonary disease and emphysema, but not asthma), diabetes mellitus, alcoholism, chronic liver disease, cerebrospinal fluid (CSF) leaks, or functional or anatomic asplenia; b) persons in certain environments or social settings (e.g., Alaskan Natives and some American Indian populations living on reservations with high disease incidence); and c) immunocompromised persons, including persons infected with HIV (*16*). Most subgroups recommended for influenza and pneumococcal vaccination could not be identified with BRFSS, and institutionalized populations are not included in BRFSS.

Vaccination rates varied substantially by state. Multiple factors are likely to account for state differences, including patterns of physician practice, existence of public health adult vaccination programs, and patients' attitudes and access to care. Public and private providers of adult immunization services at the state level need to be more aware of the factors known to affect vaccination services (e.g., a doctor's recommendation for vaccination, locations of vaccination services, and a patient's reasons for accepting or declining vaccination services). Increased awareness will aid the development and implementation of effective public health policies and practices to increase adult vaccination rates.

This study has at least two limitations. First, self-reports regarding vaccination were not validated. However, in previous studies, the sensitivity of self-report of influenza vaccination during the preceding influenza season ranged from 92% to 100% when vaccination status was validated by record review; specificity ranged from 71% to 98% (*48,49*). Using an interpretation of the kappa scale (*50*), the agreement between self-report and medical records ranged from substantial to almost perfect (kappa range: 0.74–0.92). The sensitivity of self-report of ever receiving pneumococcal vaccination ranged from 87% to 97% when vaccination status was validated by record review. Specificity ranged from 53% to 76%, and agreement with record review was moderate to substantial (kappa range: 0.42–0.64) (*49,50*). The second limitation of this study is that samples of persons in racial and ethnic minority groups were not large

enough to accurately estimate vaccination coverage for these populations in most states. Analysis of the 1997 BRFSS aggregated data across states for persons aged ≥65 years indicated lower levels of influenza and pneumococcal vaccination among non-Hispanic blacks and Hispanics compared with whites (*51*).

During 1995–1997, influenza and pneumococcal vaccination coverage among persons aged ≥65 years increased in most states (*51*). However, use of both vaccines among persons aged 65–74 years and use of pneumococcal vaccine among all persons aged ≥65 years must increase to reach the *Healthy People 2000* objectives. An objective of ≥90% coverage for influenza and pneumococcal vaccinations among persons aged ≥65 years has been developed for the *Healthy People 2010* objectives planned for release in January 2000 (*52*).

Since 1981, pneumococcal vaccinations have been covered for persons enrolled in Medicare Part B; influenza vaccinations have been covered since 1993 (*6*). Continued education of health-care providers and the community is needed to increase awareness of and demand for adult vaccination services. Interventions (e.g., standing orders for vaccination, provider reminders and feedback, and patient reminders) have been effective in increasing adult vaccination levels (*53,54*). Guidelines and tools for implementing these interventions are available through Put Prevention into Practice, a national campaign to improve delivery of clinical preventive services (*55*). In addition, opportunities for vaccination outside traditional health-care settings could be increased to reach older adults who do not routinely access traditional health-care settings.

Dental Services

Based on BRFSS data, fewer than one-half of states have achieved the *Healthy People 2000* objective for increased use of dental care services among persons aged ≥65 years (objective 13.14). This suggests a need for improvement in appropriate use of care. For example, edentate persons (i.e., those who have lost all of their natural teeth) are substantially less likely than dentate persons (i.e., those with natural teeth) to seek dental care (*17*). Older adults are more likely than younger adults to be edentate, and this factor could account for some differences in the use of dental services among age groups. A strong correlation exists between the proportion of older adults in a state who visited a dentist and the proportion of this population who are edendate (CDC, unpublished data, 1999). Because edentate persons are less likely to visit a dentist, their likelihood of early detection of oral pathology as part of a periodic dental exam is lower. However, tooth loss is not an inevitable characteristic of aging and probably reflects past dental treatment practices and societal attitudes toward tooth loss, as well as dental disease experience (*56*). Both life expectancy and the proportion of persons retaining their natural teeth into advanced age are increasing in the United States, and the need for preventive and restorative oral health services also will increase (*57*).

Ensuring oral health function and quality of life among older adults living in the United States will require sustained efforts to promote proven methods of preventing and controlling oral disease. These measures include community water fluoridation, clinical preventive services, and early detection and treatment of oral and dental conditions. To help ensure appropriate and equitable access to and use of oral health

services among older adults, health-care delivery systems might need to be modified to include coverage for these services.

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Surveillance for Five Health Risks Among Older Adults — United States, 1993–1997

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Abstract

Problem/Condition: Overweight, drinking and driving, inadequate fruit and vegetable consumption, physical inactivity, and smoking are associated with the leading causes of morbidity and mortality among older adults (i.e., persons aged ≥65 years) in the United States.

Reporting Period: This report presents data from the Behavioral Risk Factor Surveillance System (BRFSS) for 1994–1997 and from the National Health Interview Survey (NHIS) for 1993–1995.

Description of Systems: BRFSS and NHIS are maintained by CDC and have been used for surveillance purposes. Each survey is administered annually and includes questions about health risks and health behaviors from a representative sample of the U.S. civilian, noninstitutionalized population. The NHIS is designed to provide national estimates and the BRFSS, state estimates.

Results: Prevalences of overweight, drinking and driving, inadequate fruit and vegetable consumption, and smoking decreased with increasing age among older adults in the United States; physical inactivity was the only health risk that increased with increasing age. Sex and race were differentially associated with all five health risks.

Interpretation: Specific subgroups of older adults are at risk for being overweight, drinking and driving, inadequate fruit and vegetable consumption, physical inactivity, and smoking. These health risks varied by age, race, residential state, and socioeconomic status and highlight the heterogeneous nature of older adults.

Public Health Action: Surveillance for health risks among older adults provides information to help identify effective interventions for the growing population of older adults in the United States.

INTRODUCTION

In the United States, 25% of the population is aged ≥55 years, and 13% is aged ≥65 years (*1*). Persons aged ≥65 years represent the fastest growing segment of the U.S. population (*2*). During 1989–2030, the number of persons aged ≥65 years is

expected to double, and these persons are projected to account for 22% of the population in 2030 (*3*). Because aging has been associated with increased prevalence of chronic disease, disability, and death, a public health goal for older adults is to maintain health, independence, and function.

Poor health behaviors are leading contributors to morbidity and premature mortality in the United States (*4*). Excess bodyweight, drinking and driving, inadequate fruit and vegetable consumption, physical inactivity, and smoking are associated with the leading causes of death (*5*). In addition, chronic disease or disability (which persons can live with for many years and which can reduce quality of life) is associated with these health risk behaviors. Although the prevalence of health risk behaviors is usually lower among older adults (i.e., persons aged ≥65 years) than among middle-aged adults, those behaviors still contribute to morbidity and mortality among older adults. However, increasing evidence indicates that behavior change even late in life is beneficial and can result in improved disease control and enhanced quality of life (*6–12*).

In this report, prevalence estimates among noninstitutionalized older adults in the United States are presented for five health risks: a) overweight, b) drinking and driving, c) inadequate fruit and vegetable consumption, d) physical inactivity, and e) smoking. In addition, prevalence estimates among adults aged 55–64 years are presented for comparison.

METHODS

Two data sets were used for the analyses in this report: the Behavioral Risk Factor Surveillance System (BRFSS) and the National Health Interview Survey (NHIS). BRFSS data were used to assess the prevalences of overweight, drinking and driving, consumption of fruits and vegetables ≥5 times per day, physical inactivity, and smoking among adults aged ≥55 years. The BRFSS is an ongoing, state-based, random-digit–dialed telephone survey of U.S. civilian, noninstitutionalized persons aged ≥18 years (*13*). This survey collects self-reported information regarding risks and behaviors related to health status (with the understanding that self-reports can overestimate or underestimate the prevalence of certain behaviors) (*13*). The BRFSS excludes households without telephones, but only approximately 2.5% of older adults do not have a phone (*14*). Institutionalized persons, who are also not included, most likely account for approximately 5% of adults aged ≥65 years (*15*). Each year's survey consists of questions asked annually (e.g., overweight and smoking) and biannually* (e.g., alcohol use, physical activity, and fruit and vegetable consumption).

In this report, multiple years of BRFSS data were aggregated to increase the precision of prevalence estimates; data for 1994–1997 (the most recent years for which data were available) were used. Each year during 1994–1997, a total of 52 reporting areas (i.e., 50 states, the District of Columbia, and Puerto Rico) participated in BRFSS; data from Puerto Rico were not included in these analyses. Data were stratified by age group (55–64, 65–74, and ≥75 years), then weighted to both the respondent's probability of selection and the distribution of each state's population by age, sex, and

*Questions about alcohol use have been included in BRFSS only in odd-numbered years; questions about physical activity and fruit and vegetable consumption have been included only in even-numbered years.

race*, according to current census or intercensal estimates (*16,17*). Data also were stratified by region†. Software for Survey Data Analysis (SUDAAN) was used to calculate all prevalence estimates and 95% confidence intervals (CIs) (*18*). Median prevalence estimates were based on combined data from the 50 states and the District of Columbia.§ Missing data or data coded as "don't know" or "refused" were excluded from analyses. State- and sex-specific estimates were considered statistically significant if the chi-square statistic corresponded to $p<0.05$. When multiple comparisons were made, the Bonferroni method was used ($p<0.05$/number of comparisons). Data were not reported when the standard error was ≥30% of the prevalence estimate.

CDC's NHIS has collected information regarding tobacco use since 1965. For this report, NHIS data were used to assess national estimates of smoking prevalence, smokers' desire to quit smoking, and smoking cessation attempts among adults aged ≥55 years. The NHIS is an ongoing, annual, cross-sectional household survey of the U.S. civilian, noninstitutionalized population. NHIS data are obtained through personal household interview. All household members present at the time of interview are invited to participate. For children and for adults who are unavailable or unable to participate because of illness or impairment, proxy responses are permitted for portions of the NHIS. The smoking questions are asked of one sample adult in each family, and self-response is required for these questions (*19–21*).

For this report, NHIS data for 1993–1995 (the most recent years for which data were available) were aggregated to increase the precision of the prevalence estimates. Data were stratified by age (55–64, 65–74, and ≥75 years), race/ethnicity (non-Hispanic white, non-Hispanic black, and Hispanic¶), sex, education (≤8, 9–11, 12, 13–15, and ≥16 years), and region. Data were not reported when the standard error was ≥30% of the prevalence estimate. SUDAAN was used to calculate prevalence estimates and 95% CIs. Estimates were considered statistically significant if the 95% CIs did not overlap.

Overweight

Body mass index (BMI) was calculated by using self-reported height and weight measurements obtained from the combined 1996 and 1997 BRFSS results of 81,137 respondents aged ≥55 years. For both years combined, sample sizes ranged from 556 (Alaska) to 2,635 (Florida). Weight in kilograms was divided by height in meters squared (weight [kg]/height squared [m^2]) to obtain BMI. The National Institute of Health (NIH) defines overweight as a BMI of 25.0–29.9 kg/m^2 and obesity as a BMI

*Race-specific data are presented only for blacks and whites because sample sizes for other racial groups were too small for meaningful analysis.

†Northeast=Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont; Midwest=Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin; South=Alabama, Arkansas, Delaware, District of Columbia, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, and West Virginia; and West=Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming.

§The median is the midpoint of a set of measurements arranged in order of magnitude and, unlike the mean, is less influenced by extreme high or low measurements.

¶Persons of Hispanic origin can be of any race.

≥30.0 kg/m^2 (*22*).* For this report, these two categories were combined, and persons were classified as overweight if they met the definition for overweight or obesity (BMI ≥25 kg/m^2).

Another definition of overweight that has been used since the 1970s is based on the National Health and Nutrition Examination Survey II (NHANES II). Although the new NIH criteria was adopted in this country in 1998, the NHANES-derived definition has been included for comparison with older, existing data. For NHANES II, overweight was defined for men as BMI ≥27.8 kg/m^2 and for women as BMI ≥27.3 kg/m^2, which corresponds to the approximate 85th percentile of BMI for men and women aged 20–29 years (*24*).

Drinking and Driving

The prevalence of driving while under the influence of alcohol was calculated by using the combined 1995† and 1997 BRFSS results of 76,368 respondents aged ≥55 years. Both years combined, sample sizes ranged from 409 (District of Columbia) to 2,837 (Maryland). Drinking and driving was assessed by participants' responses to two questions: a) "During the past month, have you had at least one drink of any alcoholic beverage such as beer, wine, wine coolers, or liquor?" and b) "During the past month, how many times have you driven when you've had perhaps too much to drink?" Respondents who reported ≥1 time of drinking and driving during the previous month were classified as drinking and driving. Respondents who answered negatively to the first question or reported no instances of drinking and driving were classified as not drinking and driving. Drinking and driving data were collected by the 50 states and District of Columbia but could not be reported separately because the number of affected respondents was small, and therefore, estimates were unstable.

Inadequate Consumption of Fruits and Vegetables

Frequency of fruit and vegetable intake per day was obtained from the combined 1994 and 1996 BRFSS results of 71,517 respondents aged ≥55 years. Both years, sample sizes ranged from 548 (Alaska) to 2,683 (Florida). Consumption of fruits and vegetables was based on the following series of questions:

- "How often do you drink fruit juices such as orange, grapefruit, or tomato?"
- "Not counting juice, how often do you eat fruit?"
- "How often do you eat green salad?"
- "How often do you eat potatoes not including french fries, fried potatoes, or potato chips?"
- "How often do you eat carrots?"
- "Not counting carrots, potatoes, or salad, how many servings of vegetables do you usually eat?"

*The NIH definition is the same as the World Health Organization's international definition of overweight and obesity (*23*).

†The District of Columbia did not administer the 1995 BRFSS.

For each question, respondents indicated never or the number of times per day, week, month, or year that they ate the fruit or vegetable in question. From these questions, the average number of times per day that fruits and vegetables were eaten was calculated, then the prevalence of reported fruit and vegetable consumption of ≥5 times per day was calculated.

Physical Inactivity

The prevalence of physical inactivity was calculated by using the combined 1994 and 1996 BRFSS results of 71,517 respondents aged ≥55 years. Both years combined, sample sizes ranged from 548 (Alaska) to 2,683 (Florida). Leisure-time physical inactivity was defined as a negative response to the question, "During the past month, did you participate in any physical activities or exercises such as running, calisthenics, golf, gardening, or walking for exercise?"

Smoking

The prevalence of cigarette smoking was calculated by using the combined 1995-1997 BRFSS results of 116,690 respondents aged ≥55 years. During this period, sample sizes ranged from 748 (District of Columbia) to 4,181 (Maryland). Before 1996, respondents were asked, "Have you smoked at least 100 cigarettes in your entire life?", and "Do you smoke cigarettes now?" to assess self-reported smoking status. Current smokers were defined as persons who reported having smoked ≥100 cigarettes during their lifetime and who currently smoked. In 1996, the definition of current smoking changed. Respondents were asked, "Have you smoked at least 100 cigarettes in your entire life?", and "Do you now smoke cigarettes every day, some days, or not at all?" Current smokers were defined as persons who reported having smoked ≥100 cigarettes during their lifetime and who currently smoked every day or some days. This change in the definition of current smoking resulted in an increase in prevalence rates of approximately 1% (*25*).

This report also uses data from NHIS to assess the prevalence of cigarette smoking. Data from NHIS were combined for 1993–1995; the total sample size was 17,754. Participants were asked, "Have you smoked at least 100 cigarettes in your entire life?", and "Do you now smoke cigarettes every day, some days, or not at all?" Current smokers were defined as persons who reported smoking ≥100 cigarettes during their lifetime and who currently smoke every day or some days. Former smokers were defined as persons who reported having smoked ≥100 cigarettes during their lifetime but who do not smoke currently. Persons who reported never smoking were defined as persons who reported smoking no cigarettes or smoking <100 cigarettes during their lifetime.

RESULTS

Overweight

For the 50 states and District of Columbia, the prevalence of overweight (BMI ≥25 kg/m^2) decreased with increasing age among persons aged ≥55 years (Table 1).* For all age groups, the prevalence of overweight was similar among the four regions of the United States (Table 2). Although the prevalence of overweight varied among blacks and whites in most U.S. regions, in the South the prevalence was significantly greater among blacks than among whites in all age groups.

State-specific prevalence estimates of overweight ranged from 53.3% (95% CI=47.2%–59.4%) in Arizona to 71.7% (95% CI=63.3%–80.1%) in Alaska for persons aged 55–64 years (Table 1). For persons aged 65–74 years, prevalence estimates ranged from 39.6% (95% CI=34.4%–44.8%) in Hawaii to 73.4% (95% CI=64.6%–82.2%) in Alaska. For persons aged ≥75 years, the prevalence ranged from 30.5% (95% CI=24.2%–36.8%) in Hawaii to 53.6% (95% CI=48.4%–58.8%) in North Dakota.

Men were significantly more likely than women to be overweight, especially among the younger age groups (Table 3). Among persons aged 55–64 years, men were significantly more likely than women to be overweight in 44 states. Among persons aged 65–74 years, sex-specific differences existed in 30 states and, among persons aged ≥75 years, in 16 states.

The prevalence of overweight among whites was significantly different in each age group; the prevalence decreased with increasing age (Table 4). Among blacks, the prevalence of overweight was significantly lower among persons aged ≥75 years than among persons in either of the two younger age groups.

Analyses by race, sex, and age indicated that the prevalence of overweight was similar among black men and white men but was higher among black women than white women in all age groups (Table 4). For blacks in the 55–64-year and 65–74-year age groups, a significantly greater percentage of women than men were overweight (BMI ≥25 kg/m^2); for blacks in the ≥75-year age group, the prevalence among men and women was similar. For whites in all age groups, the prevalence of overweight was higher among men than women.

Drinking and Driving

For the combined 50 states and District of Columbia, the prevalence of drinking and then driving was significantly greater among persons aged 55–64 years than among those aged 65–74 years and ≥75 years. Of persons aged 55–64 years, 0.8% (95% CI=0.6%–0.9%) reported drinking and driving during the previous 30 days. Drinking and driving was reported by 0.4% (95% CI=0.3%–0.5) of persons aged 65–74 years and 0.2% (95% CI=0.1%–0.3%) of persons aged ≥75 years.

*Data presented in Tables 1–4 use a definition of overweight that combines the NIH definitions of overweight and obesity. For comparison of older, existing NHANES II data with the findings in this report, Tables A–D in the Exhibit at the end of this report present data using the NHANES II definition of overweight and obesity.

TABLE 1. Percentage of persons aged ≥55 years who are overweight,* by age group and state — United States, Behavioral Risk Factor Surveillance System (BRFSS), 1996 and 1997†

	Age group (yrs)					
	55–64		65–74		≥75	
State	%	(95% CI§)	%	(95% CI)	%	(95% CI)
Alabama	61.8	(±4.5)	59.5	(±4.6)	48.5	(± 6.0)
Alaska	71.7	(±8.4)	73.4	(±8.8)	38.3	(±15.1)
Arizona	53.3	(±6.1)	52.5	(±5.7)	44.2	(± 6.6)
Arkansas	59.6	(±4.8)	59.9	(±5.0)	42.0	(± 6.0)
California	62.1	(±3.7)	54.8	(±3.9)	42.2	(± 4.4)
Colorado	53.7	(±5.5)	56.9	(±5.7)	36.2	(± 6.6)
Connecticut	63.4	(±5.5)	57.9	(±5.2)	50.9	(± 6.3)
Delaware	66.6	(±4.6)	61.2	(±4.3)	44.4	(± 5.6)
District of Columbia	67.7	(±6.0)	63.1	(±7.0)	46.8	(± 8.0)
Florida	62.8	(±3.7)	59.1	(±9.1)	45.0	(± 3.9)
Georgia	63.2	(±4.8)	60.0	(±4.3)	46.9	(± 7.2)
Hawaii	61.6	(±5.2)	39.6	(±5.2)	30.5	(± 6.3)
Idaho	64.4	(±4.4)	57.9	(±3.9)	49.6	(± 4.8)
Illinois	61.5	(±4.2)	60.7	(±4.3)	51.3	(± 5.5)
Indiana	66.9	(±4.3)	60.8	(±4.8)	48.1	(± 5.8)
Iowa	65.9	(±3.5)	66.0	(±3.6)	49.6	(± 3.7)
Kansas	61.9	(±5.2)	55.7	(±5.1)	46.4	(± 5.6)
Kentucky	65.5	(±3.4)	57.9	(±3.3)	46.6	(± 4.1)
Louisiana	65.2	(±5.1)	65.1	(±5.2)	49.7	(± 7.4)
Maine	66.9	(±5.1)	51.6	(±5.3)	43.5	(± 6.2)
Maryland	64.8	(±3.8)	61.8	(±3.9)	51.8	(± 5.4)
Massachusetts	57.9	(±6.2)	55.0	(±6.0)	41.6	(± 6.5)
Michigan	71.3	(±3.9)	64.5	(±4.9)	50.7	(± 5.9)
Minnesota	66.9	(±3.1)	64.2	(±3.4)	47.0	(± 3.7)
Mississippi	66.0	(±5.0)	56.7	(±5.5)	42.2	(± 6.6)
Missouri	59.8	(±5.4)	55.1	(±5.4)	45.8	(± 5.9)
Montana	61.7	(±5.2)	59.6	(±5.1)	44.2	(± 5.7)
Nebraska	67.0	(±4.5)	59.1	(±4.5)	50.2	(± 4.6)
Nevada	59.9	(±6.5)	52.1	(±7.9)	36.5	(±12.8)
New Hampshire	59.5	(±6.3)	59.8	(±5.7)	52.2	(± 7.1)
New Jersey	61.3	(±4.6)	60.1	(±4.3)	46.1	(± 5.3)
New Mexico	62.6	(±5.7)	53.7	(±6.8)	50.2	(± 7.6)
New York	61.2	(±4.0)	57.7	(±4.1)	48.6	(± 4.7)
North Carolina	61.6	(±3.9)	59.9	(±3.7)	46.5	(± 4.7)
North Dakota	69.0	(±5.0)	63.8	(±5.0)	53.6	(± 5.2)
Ohio	68.0	(±4.8)	63.7	(±4.7)	46.0	(± 5.7)
Oklahoma	61.9	(±5.3)	47.9	(±3.9)	40.7	(± 5.5)
Oregon	65.2	(±3.8)	54.8	(±5.1)	43.1	(± 4.8)
Pennsylvania	67.0	(±3.5)	59.3	(±3.6)	53.2	(± 4.7)
Rhode Island	60.0	(±5.3)	57.2	(±5.3)	50.2	(± 6.0)
South Carolina	66.1	(±5.0)	57.9	(±5.2)	43.3	(± 6.8)
South Dakota	66.1	(±4.6)	63.8	(±4.4)	47.9	(± 4.7)
Tennessee	60.0	(±3.9)	53.4	(±4.1)	44.7	(± 4.9)
Texas	65.0	(±5.2)	62.6	(±5.4)	42.5	(± 7.1)
Utah	61.9	(±5.2)	56.9	(±5.5)	45.5	(± 6.2)
Vermont	65.0	(±4.0)	56.7	(±4.5)	47.9	(± 5.2)
Virginia	60.7	(±5.1)	58.2	(±5.6)	47.2	(± 7.3)
Washington	61.3	(±3.9)	57.8	(±4.1)	44.2	(± 4.8)
West Virginia	63.8	(±4.2)	60.8	(±4.1)	41.1	(± 5.0)
Wisconsin	63.4	(±5.3)	65.8	(±5.3)	47.7	(± 6.8)
Wyoming	60.6	(±4.3)	58.3	(±4.7)	47.0	(± 6.1)
Median	**63.2%**		**59.1%**		**46.5%**	
Range	**(53.3%–71.7%)**		**(39.6%–73.4%)**		**(30.5%–53.6%)**	

*Defined as body mass index ≥25 kg/m^2.

†Multiple years of BRFSS data were combined to obtain stable prevalence estimates. Combined sample size = 81,137.

§Confidence interval. CIs were calculated by multiplying the standard error by 1.96.

TABLE 2. Percentage of persons aged ≥55 years who are overweight,* by region,† age group, and race§ — United States, Behavioral Risk Factor Surveillance System (BRFSS), 1996 and 1997¶

Age group (yrs)/Race	Northeast		Midwest		South		West	
	%	(95% CI**)	%	(95% CI)	%	(95% CI)	%	(95% CI)
55–64								
White	62.3	(± 2.1)	65.1	(±1.7)	61.5	(±1.6)	61.8	(± 2.1)
Black	69.7	(± 7.2)	74.1	(±5.8)	73.5	(±3.8)	58.0	(±16.0)
Total	**62.6**	**(± 2.0)**	**65.6**	**(±1.6)**	**63.3**	**(±1.4)**	**61.0**	**(± 2.1)**
65–74								
White	57.3	(± 2.0)	61.4	(±1.7)	57.6	(±1.5)	55.7	(± 2.2)
Black	69.8	(± 7.5)	69.7	(±6.2)	71.0	(±3.8)	75.6	(±14.2)
Total	**58.2**	**(± 1.9)**	**61.9**	**(±1.7)**	**59.3**	**(±1.4)**	**54.9**	**(± 2.3)**
≥75								
White	48.3	(± 2.4)	48.4	(±2.0)	43.2	(±1.9)	43.3	(± 2.6)
Black	56.7	(±11.9)	58.5	(±9.6)	58.2	(±5.3)	52.7	(±25.5)
Total	**48.9**	**(± 2.3)**	**48.5**	**(±1.9)**	**45.2**	**(±1.8)**	**42.5**	**(± 2.5)**

*Defined as body mass index ≥25 kg/m^2.

†Northeast=Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont; Midwest=Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin; South=Alabama, Arkansas, Delaware, District of Columbia, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, and West Virginia; and West=Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming.

§Race-specific data are presented only for blacks and whites because sample sizes for other racial groups were too small for meaningful analysis.

¶Multiple years of BRFSS data were combined to obtain stable prevalence estimates. Combined sample size = 81,137.

**Confidence interval. CIs were calculated by multiplying the standard error by 1.96.

Inadequate Fruit and Vegetable Consumption

The median percentage of persons who reported eating fruits and vegetables ≥5 times per day increased with increasing age (Table 5). Of persons aged 55–64 years in the 50 states and District of Columbia, a median of 26.4% ate fruits and vegetables on average ≥5 times daily; of persons aged 65–74 years and ≥75 years, a median of 30.4% and 33.6%, respectively, ate fruits and vegetables ≥5 times daily.

Compared with other regions of the United States, the prevalence of fruit and vegetable consumption ≥5 times daily among persons aged 55–64 years was highest in the West, Northeast, and South and lowest in the Midwest. Among persons aged 65–74 years, the prevalence was highest in the Northeast and West and lowest in the Midwest and South. Among persons aged ≥75 years, region-specific prevalences were similar (Table 6). In all three regions with sample sizes that permitted stratification by race (excludes the West), the prevalence of fruit and vegetable consumption was lower for blacks than whites in all age groups, except for adults aged ≥75 years in the Midwest.

State-specific estimates of fruit and vegetable consumption ≥5 times daily ranged from 16.9% (95% CI=13.2%–20.6%) in Mississippi to 38.1% (95% CI=33.2%–43.0%) in

Arkansas for persons aged 55–64 years (Table 5). Among persons aged 65–74 years, prevalence estimates ranged from 17.4% (95% CI=13.5%–21.3%) in Mississippi to 41.9% (95% CI=38.0%–45.8%) in California. Among persons aged ≥75 years, consumption of fruits and vegetables ≥5 times daily ranged from 20.5% (95% CI=15.0%–26.0%) in Louisiana to 46.9% (95% CI=40.6%–53.2%) in Michigan.

Statistically significant age-specific differences in consumption of fruits and vegetables were observed between men and women (Table 7). Women were more likely than men to have eaten fruits and vegetables ≥5 times daily, but this difference decreased with increasing age. For persons aged 55–64 years, significant sex-specific differences in prevalence existed in 32 states; for persons aged 65–74 years, in 23 states; and for persons aged ≥75 years, in 10 states.

Compared with blacks, a greater proportion of whites in any age group reported eating fruits and vegetables ≥5 times daily (Table 8). The proportion of whites who ate fruits and vegetables ≥5 times daily increased with age. However, the age-specific proportion of blacks who reported eating fruits and vegetables ≥5 times daily was similar by age group. Analysis of race, sex, and age indicated that women in all age groups reported eating fruits and vegetables ≥5 times daily more frequently than men of the same race and age group, except for blacks aged ≥75 years (Table 8).

Physical Inactivity

For the combined 50 states and District of Columbia, the prevalence of leisure-time physical inactivity increased with increasing age. The prevalence of physical inactivity was similar for the two youngest age groups (age 55–64 years [median: 33.1%] and age 65–74 years [median: 35.1%]) (Table 9). Of persons aged ≥75 years, a median of 46.0% reported no physical activity.

For all age groups, the prevalence of physical inactivity was lowest in the West and among the highest in the South, except for persons aged ≥75 years (who had similar prevalences of physical inactivity in all four U.S. regions) (Table 10). In every region and for all age groups (except 65–74- and ≥75-year-olds in the Northeast and persons of all ages in the West), the prevalence was higher for blacks than whites.

State-specific prevalence estimates of physical inactivity ranged from 23.8% (95% CI=20.5%–27.1%) in Washington to 57.9% (95% CI=53.6%–62.2%) in Kentucky for persons aged 55–64 years (Table 9). For persons aged 65–74 years, prevalence estimates ranged from 21.3% (95% CI=18.0%–24.6%) in Washington to 58.2% (95% CI=54.1%–62.3%) in Georgia. For persons aged ≥75 years, the prevalence ranged from 26.1% (95% CI=21.8%–30.4%) in California to 68.2% (95% CI=63.9%–72.5%) in Kentucky.

The age-specific prevalence of physical inactivity was similar among men and women (Table 11); however, sex-specific differences were observed and occurred more frequently among persons in the oldest age group. For persons aged 55–64 years, sex-specific differences in the prevalence of physical inactivity existed in five states; in three of these states, the prevalence was higher for men than for women. Among persons aged ≥75 years, the prevalence of physical inactivity was significantly different for men and women in 18 states; in all 18 states, the prevalence of physical inactivity was higher among women.

The prevalence of physical inactivity was higher among blacks than whites in every age group (Table 12). Among blacks, reported prevalence estimates of physical

TABLE 3. Percentage of persons aged ≥55 years who are overweight,* by age group, sex, and state — United States, Behavioral Risk Factor Surveillance System (BRFSS), 1996 and 1997†

	Age group (yrs)											
	55–64				65–74				≥75			
	Men		Women		Men		Women		Men		Women	
State	%	(95% CI§)	%	(95% CI)	%	(95% CI)	%	(95% CI)	%	(95% CI)	%	(95% CI)
Alabama	64.3	(± 7.0)	59.5	(± 5.8)	59.5	(± 7.9)	59.5	(± 5.7)	53.8	(±10.6)	45.6	(± 6.9)
Alaska	75.6	(±12.1)	66.7	(±11.4)	79.0	(±10.5)	68.3	(±13.5)	¶	¶	42.5	(±20.7)
Arizona	64.3	(± 8.3)	42.7	(± 8.5)**	59.7	(± 8.2)	45.5	(± 7.9)**	42.3	(±10.9)	45.4	(± 8.4)
Arkansas	70.2	(± 7.3)	49.3	(± 6.2)**	66.1	(± 8.2)	55.1	(± 6.2)**	45.3	(±10.9)	40.0	(± 6.9)
California	70.8	(± 5.2)	53.7	(± 5.1)**	59.2	(± 5.8)	51.1	(± 5.2)**	48.7	(± 7.8)	38.5	(± 5.3)**
Colorado	56.6	(± 8.4)	50.9	(± 7.3)	65.1	(± 8.7)	50.4	(± 7.5)**	45.1	(±11.8)	30.3	(± 7.5)**
Connecticut	76.5	(± 7.2)	50.1	(± 7.3)**	68.6	(± 7.2)	49.0	(± 7.3)**	54.6	(±10.7)	49.0	(± 7.7)
Delaware	71.7	(± 6.7)	61.7	(± 6.3)**	65.2	(± 6.9)	58.2	(± 5.5)	46.4	(± 9.4)	43.1	(± 6.9)
District of Columbia	75.9	(± 7.9)	60.7	(± 8.6)**	63.7	(±10.9)	62.7	(± 9.0)	52.0	(±14.4)	44.1	(± 9.4)
Florida	73.3	(± 5.1)	53.7	(± 4.9)**	68.4	(± 4.7)	52.1	(± 4.2)**	51.3	(± 5.9)	40.1	(± 4.9)**
Georgia	73.1	(± 6.5)	53.9	(± 6.8)**	66.5	(± 6.0)	55.2	(± 6.1)**	42.2	(±12.3)	49.0	(± 8.7)
Hawaii	73.5	(± 6.6)	50.6	(± 7.6)**	41.2	(± 8.4)	38.4	(± 6.5)	31.8	(± 9.5)	29.0	(± 8.0)
Idaho	72.5	(± 5.5)	56.4	(± 6.2)**	66.1	(± 6.1)	51.1	(± 4.9)**	58.9	(± 8.3)	43.3	(± 5.6)**
Illinois	67.4	(± 6.3)	55.8	(± 5.6)**	70.2	(± 6.7)	53.9	(± 5.5)**	56.7	(± 9.7)	48.1	(± 6.6)
Indiana	74.7	(± 5.7)	59.2	(± 6.5)**	70.6	(± 7.3)	53.8	(± 6.2)**	54.7	(± 9.8)	44.5	(± 7.0)
Iowa	75.2	(± 5.1)	57.0	(± 4.8)**	70.7	(± 5.6)	62.2	(± 4.6)**	57.9	(± 7.0)	44.9	(± 4.4)**
Kansas	73.6	(± 7.1)	51.0	(± 7.4)**	59.2	(± 8.1)	52.8	(± 6.4)	61.8	(± 9.8)	36.8	(± 6.2)**
Kentucky	72.3	(± 5.2)	59.0	(± 4.5)**	59.9	(± 5.5)	56.3	(± 4.1)	58.4	(± 8.0)	40.4	(± 4.4)**
Louisiana	70.8	(± 7.6)	60.1	(± 6.8)**	71.9	(± 7.6)	60.1	(± 6.9)**	52.5	(±12.2)	48.1	(± 9.0)
Maine	67.8	(± 7.4)	65.9	(± 6.9)	62.8	(± 7.8)	42.9	(± 7.0)**	39.2	(±10.9)	46.0	(± 7.3)
Maryland	72.0	(± 5.3)	58.3	(± 5.1)**	65.4	(± 5.8)	59.0	(± 5.2)	56.1	(± 8.7)	48.8	(± 6.7)
Massachusetts	67.8	(± 9.0)	48.5	(± 8.2)**	62.9	(± 9.5)	49.9	(± 7.6)**	50.8	(±10.9)	35.0	(± 7.8)**
Michigan	80.2	(± 5.4)	63.0	(± 5.5)**	69.9	(± 7.5)	60.2	(± 6.3)	54.4	(±10.6)	48.5	(± 7.0)
Minnesota	75.8	(± 4.2)	58.0	(± 4.5)**	70.7	(± 5.1)	58.7	(± 4.7)**	52.4	(± 6.7)	43.9	(± 4.4)**
Mississippi	72.9	(± 7.5)	59.8	(± 6.5)**	60.1	(± 9.1)	54.2	(± 6.6)	40.7	(±12.4)	43.2	(± 7.7)
Missouri	69.2	(± 8.0)	51.4	(± 7.1)**	60.8	(± 8.6)	50.7	(± 6.9)	51.2	(±10.9)	42.7	(± 6.8)
Montana	70.4	(± 7.5)	52.6	(± 7.1)**	70.5	(± 7.2)	49.8	(± 6.8)**	52.7	(± 9.7)	38.9	(± 6.8)**
Nebraska	71.8	(± 6.7)	62.2	(± 5.8)**	63.9	(± 6.7)	55.0	(± 5.9)	57.3	(± 8.5)	46.1	(± 5.4)**

Nevada	68.0	(± 8.9)	51.1	(± 9.0)**	61.3	(±11.5)	43.0	(± 9.9)**	46.8	(±21.0)	30.8	(±15.7)
New Hampshire	68.3	(±8.8)	50.3	(± 8.6)**	74.5	(± 7.4)	48.1	(± 7.8)**	62.0	(±12.2)	46.8	(± 8.5)**
New Jersey	71.6	(±7.1)	51.5	(± 5.9)**	65.3	(± 6.9)	56.5	(± 5.5)**	46.7	(± 8.7)	45.7	(± 6.6)
New Mexico	66.0	(±8.6)	59.3	(± 7.7)	55.3	(±10.9)	52.4	(± 8.8)	67.4	(±11.3)	36.9	(± 8.8)**
New York	67.4	(±5.9)	55.4	(± 5.2)**	61.5	(± 6.6)	55.0	(± 5.0)	53.7	(± 8.1)	45.3	(± 5.5)
North Carolina	70.2	(±5.6)	53.5	(± 5.4)**	67.4	(± 5.7)	54.2	(± 4.7)**	49.3	(± 8.7)	44.8	(± 5.5)
North Dakota	78.2	(±7.1)	59.9	(± 7.2)**	72.8	(± 6.9)	55.2	(± 6.7)**	64.2	(± 9.3)	47.6	(± 5.9)**
Ohio	76.9	(±6.3)	59.2	(± 7.1)**	64.6	(± 6.8)	62.9	(± 5.9)	41.1	(±10.1)	48.5	(± 6.8)
Oklahoma	73.2	(±7.3)	52.7	(± 7.3)**	59.1	(± 5.1)	38.4	(± 5.5)**	41.1	(± 9.4)	40.4	(± 6.7)
Oregon	75.5	(±5.2)	55.1	(± 5.4)**	58.4	(± 9.7)	52.0	(± 5.4)	43.6	(± 7.8)	42.7	(± 6.0)
Pennsylvania	72.8	(±5.2)	61.5	(± 4.8)**	63.7	(± 5.4)	55.7	(± 4.7)**	56.9	(± 8.6)	51.3	(± 5.5)
Rhode Island	68.1	(±7.3)	52.6	(± 7.4)**	62.7	(± 8.2)	53.0	(± 6.8)	51.0	(±11.0)	49.8	(± 7.1)
South Carolina	73.7	(±8.0)	59.2	(± 6.3)**	69.4	(± 8.1)	48.5	(± 6.1)**	36.0	(±12.6)	47.1	(± 7.6)
South Dakota	74.3	(±6.1)	57.5	(± 6.9)**	66.8	(± 6.9)	61.3	(± 5.7)	52.5	(± 8.3)	45.0	(± 5.8)
Tennessee	66.2	(±6.3)	54.2	(± 4.9)**	59.1	(± 7.0)	49.0	(± 5.1)**	51.7	(± 9.7)	41.0	(± 5.4)
Texas	70.6	(±8.3)	59.8	(± 6.4)**	70.6	(± 8.3)	56.6	(± 6.9)**	50.9	(±12.4)	36.7	(± 8.2)
Utah	73.1	(±6.8)	52.0	(± 7.2)**	60.1	(± 8.2)	53.9	(± 7.5)	55.7	(±10.2)	38.7	(± 7.5)**
Vermont	76.2	(±5.1)	53.5	(± 5.8)**	63.4	(± 6.7)	51.5	(± 5.9)**	49.4	(± 9.0)	46.9	(± 6.4)
Virginia	65.7	(±8.4)	56.0	(± 6.0)	64.4	(± 8.4)	52.8	(± 7.1)**	53.5	(±13.6)	43.9	(± 8.2)
Washington	68.1	(±5.4)	54.0	(± 5.5)**	68.0	(± 6.1)	49.7	(± 5.4)**	49.2	(± 7.9)	40.4	(± 6.1)
West Virginia	64.9	(±6.5)	62.9	(± 5.3)	62.2	(± 6.9)	59.5	(± 5.0)	38.1	(± 9.5)	42.6	(± 5.7)
Wisconsin	69.7	(±7.2)	57.0	(± 7.6)**	74.0	(± 7.7)	59.6	(± 7.0)**	58.4	(±13.4)	41.0	(± 7.4)**
Wyoming	69.0	(±6.3)	51.8	(± 5.7)**	62.3	(± 7.2)	54.1	(± 6.3)	54.1	(±11.7)	43.5	(± 7.0)
Median	**71.7%**		**55.8%**		**64.6%**		**53.9%**		**51.9%**		**43.9%**	
Range	**(56.6%–80.2%)**		**(42.7%–66.7%)**		**(41.2%–79.0%)**		**(38.4%–68.3%)**		**(31.8%–67.4%)**		**(29.0%–51.3%)**	

*Defined as body mass index ≥25 kg/m^2.
†Multiple years of BRFSS data were combined to obtain stable prevalence estimates. Combined sample size = 81,137.
§Confidence interval. CIs were calculated by multiplying the standard error by 1.96.
¶Standard error ≥30% of the estimate.
**p<0.05.

TABLE 4. Percentage of persons aged ≥55 years who are overweight,* by age group, race,† and sex — United States, Behavioral Risk Factor Surveillance System (BRFSS), 1996 and 1997§

	White		Black	
Age group (yrs)/Sex	%	(95% CI¶)	%	(95% CI)
55–64				
Men	72.0	(± 1.3)	66.5	(± 5.5)
Women	53.7	(± 1.2)	75.1	(± 3.4)
Total	**62.6**	**(± 0.9)**	**71.3**	**(± 3.1)**
65–74				
Men	65.2	(± 1.4)	66.4	(± 5.5)
Women	52.6	(± 1.2)	73.9	(± 3.5)
Total	**58.1**	**(± 0.9)**	**70.9**	**(± 3.0)**
≥75				
Men	51.0	(± 1.9)	56.2	(± 8.0)
Women	42.5	(± 1.3)	58.4	(± 5.2)
Total	**45.7**	**(± 1.1)**	**57.6**	**(± 4.4)**

*Defined as body mass index ≥25 kg/m^2.
†Race-specific data are presented only for blacks and whites because sample sizes for other racial groups were too small for meaningful analysis.
§Multiple years of BRFSS data were combined to obtain stable prevalence estimates. Combined sample size = 81,137.
¶Confidence interval. CIs were calculated by multiplying the standard error by 1.96.

inactivity were similar for men and women in all age groups. Among whites, the prevalence of physical inactivity was higher for women than men, except for persons aged 55–64 years.

Smoking

State-specific BRFSS data indicate that for the combined years 1995–1997, the median prevalence of current cigarette smoking was 21.2% among persons aged 55–64 years, 13.3% among persons aged 65–74 years, and 6.8% among persons aged ≥75 years (Table 13). State-specific prevalences ranged from 11.8% (95% CI=9.3%–14.3%) in Utah to 29.3% (95% CI=26.3%–32.3%) in Kentucky among persons aged 55–64 years, from 7.7% (95% CI=6.1%–9.3%) in Oklahoma to 26.0% (95% CI=20.4%–31.6%) in Nevada among persons aged 65–74 years, and from 2.6% (95% CI=1.2%–4.0%) in Utah to 14.7% (95% CI=7.9%–21.5%) in Nevada among persons aged ≥75 years. Across all age groups, the median prevalence of smoking was greater for men (aged 55–64 years [21.8%], aged 65–74 years [13.9%], and aged ≥75 years [8.0%]) than for women (aged 55–64 years [20.1%], aged 65–74 years [12.9%], and aged ≥75 years [6.3%]).

Nationwide, for the combined years 1993–1995, NHIS data indicate the prevalence of current cigarette smoking was 23.8% (95% CI=22.6%–25.0%) among persons aged 55–64 years, 15.2% (95% CI=14.3%–16.1%) among persons aged 65–74 years, and 8.4% (95% CI=7.5%–9.3%) among persons aged ≥75 years (Table 14). Overall, the prevalence of current smoking was higher among men than women and among non-Hispanic blacks than non-Hispanic whites and Hispanics. Overall, the prevalence

TABLE 5. Percentage of persons aged ≥55 years who ate fruits and vegetables ≥5 times daily, by age group and state — United States, Behavioral Risk Factor Surveillance System (BRFSS), 1994 and 1996*

State	Age group (yrs)					
	55–64		65–74		≥75	
	%	(95% CI†)	%	(95% CI)	%	(95% CI)
Alabama	32.7	(±5.5)	28.6	(± 3.9)	32.9	(±5.5)
Alaska	29.5	(±9.2)	30.4	(±11.0)	—	§
Arizona	25.3	(±4.7)	35.1	(± 5.9)	39.9	(±7.3)
Arkansas	38.1	(±4.9)	38.5	(± 4.9)	43.3	(±6.1)
California	33.7	(±3.5)	41.9	(± 3.9)	42.3	(±4.7)
Colorado	27.1	(±4.9)	33.0	(± 5.7)	32.4	(±7.1)
Connecticut	36.0	(±5.7)	39.0	(± 4.9)	41.5	(±6.3)
Delaware	23.1	(±4.3)	22.9	(± 3.9)	28.3	(±5.3)
District of Columbia	36.9	(±6.5)	32.9	(± 6.5)	45.1	(±7.8)
Florida	23.6	(±3.1)	30.5	(± 2.9)	35.8	(±3.9)
Georgia	28.1	(±4.5)	28.9	(± 3.7)	34.5	(±6.9)
Hawaii	22.7	(±4.9)	31.7	(± 4.7)	33.5	(±7.3)
Idaho	29.8	(±4.3)	29.8	(± 4.3)	31.7	(±5.9)
Illinois	17.7	(±3.3)	26.8	(± 4.1)	30.3	(±5.1)
Indiana	25.3	(±4.1)	27.3	(± 3.9)	29.0	(±4.9)
Iowa	18.2	(±3.1)	24.7	(± 3.3)	28.2	(±3.7)
Kansas	31.2	(±5.5)	39.2	(± 5.1)	46.6	(±5.5)
Kentucky	19.7	(±3.3)	22.9	(± 2.9)	22.1	(±3.7)
Louisiana	26.2	(±4.7)	28.2	(± 4.7)	20.5	(±5.5)
Maine	29.1	(±5.1)	32.6	(± 4.9)	33.8	(±6.1)
Maryland	25.6	(±3.1)	31.4	(± 3.5)	34.0	(±4.7)
Massachusetts	32.3	(±5.5)	38.6	(± 5.7)	37.1	(±6.5)
Michigan	27.7	(±2.0)	33.7	(± 4.3)	46.9	(±6.3)
Minnesota	25.5	(±2.9)	29.6	(± 3.3)	33.9	(±3.7)
Mississippi	16.9	(±3.7)	17.4	(± 3.9)	24.6	(±5.7)
Missouri	24.1	(±5.1)	30.9	(± 4.9)	36.0	(±6.1)
Montana	26.6	(±5.5)	31.7	(± 5.1)	29.7	(±6.1)
Nebraska	24.8	(±4.1)	28.9	(± 4.3)	38.4	(±4.9)
Nevada	23.3	(±4.7)	28.7	(± 5.5)	33.1	(±8.6)
New Hampshire	29.2	(±5.5)	41.0	(± 5.9)	36.4	(±7.1)
New Jersey	30.3	(±5.1)	37.8	(± 4.9)	34.8	(±6.1)
New Mexico	31.1	(±5.7)	29.9	(± 6.3)	28.1	(±7.4)
New York	24.8	(±3.7)	30.0	(± 3.9)	31.6	(±4.7)
North Carolina	20.1	(±3.7)	20.8	(± 3.3)	21.0	(±4.1)
North Dakota	25.3	(±4.9)	26.1	(± 4.7)	30.5	(±4.9)
Ohio	19.6	(±5.1)	24.3	(± 5.1)	25.0	(±6.1)
Oklahoma	18.7	(±3.9)	22.7	(± 3.5)	28.2	(±5.1)
Oregon	26.4	(±3.7)	32.4	(± 4.1)	32.0	(±4.5)
Pennsylvania	27.1	(±3.1)	34.0	(± 3.3)	32.7	(±4.1)
Rhode Island	19.5	(±5.7)	27.4	(± 6.9)	31.8	(±7.8)
South Carolina	30.4	(±4.5)	31.1	(± 5.1)	35.2	(±7.8)
South Dakota	27.9	(±4.5)	30.4	(± 4.3)	36.5	(±4.7)
Tennessee	29.9	(±3.7)	34.0	(± 3.7)	29.2	(±4.3)
Texas	31.8	(±5.7)	37.1	(± 6.5)	33.6	(±7.6)
Utah	25.0	(±4.5)	27.4	(± 4.9)	33.5	(±6.1)
Vermont	32.6	(±4.1)	36.0	(± 4.5)	43.8	(±5.3)
Virginia	30.3	(±4.9)	32.7	(± 5.1)	35.0	(±7.4)
Washington	24.2	(±3.3)	29.0	(± 3.5)	34.4	(±4.7)
West Virginia	22.6	(±3.5)	26.4	(± 3.7)	26.5	(±4.3)
Wisconsin	24.6	(±4.9)	33.0	(± 5.7)	45.3	(±7.6)
Wyoming	27.8	(±4.5)	28.3	(± 4.9)	37.3	(±6.9)
Median	**26.4%**		**30.4%**		**33.6%**	
Range	**(16.9%–38.1%)**		**(17.4%–41.9%)**		**(20.5%–46.9%)**	

*Multiple years of BRFSS data were combined to obtain stable prevalence estimates. Combined sample size = 71,517. Questions about fruit and vegetable consumption were included in the BRFSS only in even-numbered years.

†Confidence interval. CIs were calculated by multiplying the standard error by 1.96.

§Standard error ≥30% of the estimate.

TABLE 6. Percentage of persons aged ≥55 years who ate fruits and vegetables ≥5 times daily, by region,* age group, and race† — United States, Behavioral Risk Factor Surveillance System (BRFSS), 1994 and 1996§

Age group (yrs)/Race	Northeast		Midwest		South		West	
	%	(95% CI¶)	%	(95% CI)	%	(95% CI)	%	(95% CI)
55–64								
White	29.2	(±2.1)	24.3	(±1.7)	27.7	(±1.5)	29.4	(± 2.1)
Black	18.5	(±5.4)	18.1	(±5.1)	21.5	(±3.1)	31.3	(±14.9)
Total	**26.7**	**(±1.9)**	**24.0**	**(±1.6)**	**26.7**	**(±1.4)**	**30.1**	**(± 2.1)**
65–74								
White	35.1	(±2.0)	31.3	(±1.8)	31.0	(±1.5)	37.5	(± 2.3)
Black	26.6	(±7.5)	19.6	(±5.1)	24.9	(±3.5)	—	**
Total	**34.2**	**(±1.9)**	**30.6**	**(±1.7)**	**30.0**	**(±1.4)**	**37.1**	**(± 2.3)**
≥75								
White	34.6	(±2.5)	36.5	(±2.1)	33.0	(±2.0)	38.9	(± 2.3)
Black	21.0	(±9.1)	27.4	(±9.4)	21.0	(±4.1)	—	**
Total	**34.0**	**(±2.4)**	**36.2**	**(±2.0)**	**31.6**	**(±1.9)**	**38.4**	**(± 2.3)**

*Northeast=Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont; Midwest=Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin; South=Alabama, Arkansas, Delaware, District of Columbia, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, and West Virginia; and West=Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming.

†Race-specific data are presented only for blacks and whites because sample sizes for other racial groups were too small for meaningful analysis.

§Multiple years of BRFSS data were combined to obtain stable prevalence estimates. Combined sample size = 71,517. Questions about fruit and vegetable consumption were included in the BRFSS only in even-numbered years.

¶Confidence interval. CIs were calculated by multiplying the standard error by 1.96.

**Standard error ≥30% of the estimate.

of current smoking was highest among persons with less education and among persons living below poverty status.* The prevalence of current smoking declined with increasing age for all demographic groups.

DISCUSSION

Overweight

Excess bodyweight is a health risk for coronary artery disease, some cancers, diabetes, hypertension, and osteoarthritis (*26*). Although the benefits of intentional weight loss are well documented for adults, few studies have examined weight loss

*Poverty statistics are based on definitions developed by the Social Security Administration in 1964 (which were subsequently modified by federal interagency committees in 1969 and 1980) and prescribed by the Office of Management and Budget as the standard to be used by federal agencies for statistical purposes.

among older adults. A limited number of studies suggest intentional weight loss among older adults might benefit disease management (*6,7*) and extend life expectancy (*27*). Although the findings in this report indicate that the prevalence of overweight decreased with increasing age among persons aged ≥55 years, this finding might not be generalizable to the total U.S. population of adults aged ≥55 years. Because the BRFSS samples only noninstitutionalized older adults (i.e., a healthier subgroup of older adults), the prevalence of overweight might be underestimated. In addition, the results in this report are affected by survival bias because older adults who participated in the study tended to have healthier lifestyles than older adults who had died.

In this report, the prevalence of overweight varied by state and region. The prevalence of overweight for adults in each of the three age groups was highest in Alaska or North Dakota and lowest in Arizona or Hawaii. Although prevalence estimates were lower in the West for all age groups, the West could not be statistically differentiated from the other three U.S. regions. Some of the high state-specific prevalences might reflect a limitation of the BMI measurement. Because of the inability to distinguish whether excess bodyweight is from fat or muscle, some physically fit persons might be grouped inappropriately with sedentary, overweight persons, who are at risk and who are the focus of this report.

In this analysis of BRFSS data, the prevalence of overweight was generally higher among men than women. Similar results have been reported by applying the new definition of overweight (BMI ≥25 kg/m^2) to existing NHANES II data (*22*).

Several sociodemographic characteristics have been associated with being overweight. In this report, a greater proportion of black women than white women was found to be overweight. Sociocultural factors (e.g., education, income, dietary preferences, and attitudes toward overweight) (*28*) might account for some of the racial difference observed. In addition, among U.S. adults, an inverse relation between overweight and education has been observed (*29*).

Obesity is a complex topic of study — especially determining the relation between obesity and its associated mortality risk. In addition to examining potential risk factors for mortality associated with obesity, the distribution of body fat (e.g., wrist-to-hip or waist circumference) (*26–33*) and the amount of weight gained during adulthood (*33*) are also being examined. Although weight loss among obese persons has been advocated, a distinction must be made between intentional and unintentional weight loss and the effects of each. Some intentional methods of weight loss (e.g., crash dieting) can be harmful, and weight loss that is unintentional might reflect an underlying pathologic condition that could pose a mortality risk.

The usefulness of BMI in assessing bodyweight among older adults might be limited (*33*) because BMI is a ratio of weight-to-height that does not distinguish fat from muscle weight. Therefore, rather than focusing on an ideal bodyweight, modification of health behaviors that influence bodyweight — particularly diet and physical activity — should be emphasized as part of a comprehensive health assessment (*22*).

Categorization of overweight in this report was based on self-report of height and bodyweight and is subject to misreporting. Height is generally overreported by older adults (*34*), and bodyweight is generally underreported by overweight persons, especially by overweight women (*34,35*). A validation study of BRFSS documented the actual population mean BMI was 1.5 kg/m^2 greater than the mean BMI calculated from

TABLE 7. Percentage of persons aged ≥55 years who ate fruits and vegetables ≥5 times daily, by age group, sex, and state — United States, Behavioral Risk Factor Surveillance System (BRFSS), 1994 and 1996*

	Age group (yrs)											
	55–64				65–74				≥75			
	Men		Women		Men		Women		Men		Women	
State	%	(95% CI†)	%	(95% CI)	%	(95% CI)	%	(95% CI)	%	(95% CI)	%	(95% CI)
Alabama	32.2	(± 8.9)	33.1	(± 6.4)	23.3	(± 6.1)	32.1	(± 5.0)§	34.7	(±10.0)	31.8	(±10.0)
Alaska	28.0	(±14.2)	31.2	(±10.9)	¶	¶	36.6	(±16.1)	¶	¶	¶	¶
Arizona	19.0	(± 6.7)	31.0	(± 6.6)§	31.4	(± 9.3)	38.3	(± 7.4)	35.3	(±12.3)	42.6	(± 8.4)
Arkansas	34.8	(± 7.6)	41.0	(± 6.1)	31.1	(± 7.7)	44.5	(± 5.9)§	42.9	(±12.3)	43.6	(± 6.9)
California	25.9	(± 5.1)	40.9	(± 4.9)§	35.3	(± 6.1)	47.0	(± 5.1)§	31.1	(± 7.8)	49.0	(± 5.8)§
Colorado	21.5	(± 7.0)	32.4	(± 6.7)§	19.1	(± 7.0)	44.7	(± 8.1)§	25.2	(±11.4)	36.2	(± 8.9)
Connecticut	30.5	(± 8.9)	41.0	(± 7.0)	35.5	(± 7.6)	41.8	(± 6.5)	40.4	(±11.3)	42.0	(± 7.6)
Delaware	15.6	(± 5.3)	29.9	(± 6.3)§	19.1	(± 5.9)	25.7	(± 5.2)	15.6	(± 7.9)	35.6	(± 6.8)§
District of Columbia	27.2	(± 8.6)	44.9	(± 8.7)§	20.9	(± 7.9)	39.9	(± 8.6)§	41.0	(±13.4)	47.4	(± 9.8)
Florida	18.6	(± 4.5)	27.9	(± 4.3)§	25.3	(± 4.3)	34.5	(± 3.9)§	27.8	(± 6.0)	41.4	(± 4.9)§
Georgia	19.5	(± 5.9)	35.9	(± 6.5)§	28.4	(± 5.9)	29.3	(± 4.9)	28.7	(±11.5)	36.7	(± 8.3)
Hawaii	15.8	(± 5.7)	28.6	(± 7.3)§	27.4	(± 7.4)	35.1	(± 6.0)	29.1	(±10.7)	39.3	(± 9.3)
Idaho	21.6	(± 5.7)	37.6	(± 5.8)§	26.2	(± 6.7)	32.7	(± 5.3)	30.7	(±10.6)	32.3	(± 6.8)
Illinois	13.2	(± 4.8)	21.7	(± 4.6)§	19.5	(± 6.3)	32.0	(± 5.5)§	24.1	(± 8.4)	33.9	(± 6.2)
Indiana	20.7	(± 5.7)	29.4	(± 5.6)§	25.5	(± 6.2)	28.6	(± 5.3)	18.8	(± 7.7)	34.3	(± 5.9)§
Iowa	16.4	(± 4.5)	19.9	(± 4.2)	18.7	(± 4.5)	29.5	(± 4.9)§	24.2	(± 6.5)	30.3	(± 4.4)
Kansas	28.4	(± 8.3)	33.7	(± 7.4)	37.9	(± 8.1)	40.1	(± 6.5)	54.9	(± 9.8)	41.3	(± 6.5)§
Kentucky	14.1	(± 4.7)	24.8	(± 4.4)§	18.1	(± 4.5)	26.7	(± 3.9)§	17.3	(± 7.2)	24.4	(± 4.4)
Louisiana	21.5	(± 7.1)	30.4	(± 6.6)	25.3	(± 8.0)	30.1	(± 6.0)	17.5	(± 8.7)	22.4	(± 7.0)
Maine	31.0	(± 7.9)	27.2	(± 6.7)	31.0	(± 7.6)	33.8	(± 6.3)	31.2	(±11.0)	35.2	(± 7.4)
Maryland	24.9	(± 4.7)	26.2	(± 4.2)	30.0	(± 5.6)	32.3	(± 4.4)	32.9	(± 7.8)	34.7	(± 5.7)
Massachusetts	21.1	(± 7.2)	41.3	(± 7.7)§	30.3	(± 8.7)	44.6	(± 7.5)§	32.1	(±11.3)	40.0	(± 7.8)
Michigan	18.3	(± 5.3)	36.4	(± 5.5)§	24.3	(± 6.2)	40.7	(± 5.8)§	33.7	(±11.0)	54.6	(± 7.2)§
Minnesota	17.4	(± 4.1)	33.2	(± 4.3)§	23.9	(± 5.1)	34.2	(± 4.3)§	31.7	(± 6.7)	35.2	(± 4.2)
Mississippi	13.1	(± 5.3)	20.1	(± 5.3)	14.6	(± 6.3)	19.4	(± 5.3)	19.8	(± 9.8)	27.2	(± 6.6)
Missouri	23.3	(± 8.7)	24.6	(± 6.0)	28.4	(± 8.0)	33.3	(± 6.1)	39.4	(±12.9)	34.3	(± 6.3)
Montana	15.8	(± 6.7)	37.1	(± 7.9)§	24.1	(± 7.6)	37.6	(± 6.9)§	26.8	(± 9.6)	31.8	(± 7.5)
Nebraska	22.1	(± 6.3)	27.3	(± 5.4)	24.2	(± 6.3)	32.7	(± 5.7)§	25.2	(± 8.5)	45.1	(± 5.8)§

Nevada	17.0	(± 6.4)	29.7	(± 6.7)[§]	26.5	(± 8.2)	30.7	(± 7.5)	22.9	(±11.7)	39.1	(±11.8)
New Hampshire	18.9	(± 7.2)	39.1	(± 7.8)[§]	32.1	(± 9.2)	46.9	(± 7.7)[§]	29.5	(±12.1)	41.1	(± 9.2)
New Jersey	26.8	(± 7.9)	33.5	(± 6.5)	31.9	(± 7.6)	41.7	(± 6.2)	27.8	(± 9.8)	39.4	(± 7.6)
New Mexico	22.6	(± 7.7)	38.8	(± 7.8)[§]	24.0	(± 8.7)	34.2	(± 8.6)	22.0	(±10.8)	33.0	(±10.0)
New York	18.5	(± 5.1)	30.3	(± 5.2)[§]	25.9	(± 6.2)	33.0	(± 5.1)	26.7	(± 8.6)	34.1	(± 5.5)
North Carolina	15.1	(± 5.4)	24.5	(± 5.2)[§]	18.1	(± 5.2)	22.6	(± 4.2)	17.7	(± 6.8)	23.0	(± 5.3)
North Dakota	17.2	(± 6.0)	33.0	(± 7.4)[§]	20.4	(± 6.8)	31.2	(± 6.2)[§]	26.2	(± 9.5)	33.0	(± 5.6)
Ohio	15.7	(± 7.4)	23.1	(± 6.7)	22.6	(± 7.6)	25.6	(± 6.6)	—	[¶]	29.5	(± 7.3)
Oklahoma	15.4	(± 5.7)	21.2	(± 5.4)	22.2	(± 5.5)	23.2	(± 4.5)	20.9	(± 8.4)	32.6	(± 6.2)[§]
Oregon	20.5	(± 5.3)	31.9	(± 5.1)[§]	22.8	(± 5.6)	40.7	(± 5.4)[§]	25.6	(± 7.8)	35.4	(± 5.6)[§]
Pennsylvania	20.8	(± 4.5)	32.6	(± 4.5)[§]	28.5	(± 4.9)	38.0	(± 4.3)[§]	27.2	(± 7.2)	35.6	(± 5.2)
Rhode Island	12.5	(± 7.6)	25.5	(± 8.4)[§]	25.1	(±11.8)	29.2	(± 8.3)	34.6	(±15.0)	30.5	(± 9.0)
South Carolina	26.1	(± 6.8)	34.1	(± 6.2)	36.6	(± 8.9)	26.8	(± 5.5)	41.7	(±18.3)	32.5	(± 7.6)
South Dakota	21.6	(± 6.2)	33.8	(± 6.4)[§]	23.7	(± 6.1)	36.4	(± 5.6)[§]	30.4	(± 8.1)	39.9	(± 5.8)
Tennessee	29.6	(± 6.1)	30.3	(± 4.5)	31.5	(± 6.1)	35.8	(± 4.8)	26.7	(± 7.8)	30.6	(± 5.0)
Texas	31.1	(± 8.7)	32.5	(± 7.2)	33.6	(±10.7)	39.9	(± 7.8)	33.9	(±15.4)	33.5	(± 8.6)
Utah	19.1	(± 6.1)	30.3	(± 6.6)[§]	22.8	(± 6.9)	31.5	(± 6.8)	32.6	(±11.3)	34.0	(± 7.2)
Vermont	22.2	(± 5.3)	42.4	(± 5.8)[§]	28.3	(± 6.9)	42.0	(± 5.9)[§]	35.2	(± 9.3)	48.6	(± 6.3)[§]
Virginia	21.9	(± 7.3)	37.9	(± 6.7)[§]	22.4	(± 7.5)	39.7	(± 6.6)[§]	30.2	(±13.0)	38.0	(± 8.8)
Washington	22.0	(± 4.8)	26.3	(± 4.6)	21.5	(± 5.1)	34.9	(± 5.0)[§]	32.8	(± 7.7)	35.5	(± 5.8)
West Virginia	15.9	(± 4.8)	28.5	(± 4.8)[§]	22.6	(± 6.2)	29.1	(± 4.6)	28.4	(± 8.1)	25.3	(± 5.0)
Wisconsin	19.4	(± 6.8)	29.5	(± 7.2)[§]	24.8	(± 8.3)	38.9	(± 7.5)[§]	45.5	(±15.0)	45.1	(± 8.2)
Wyoming	19.4	(± 6.2)	36.2	(± 6.2)[§]	17.9	(± 6.2)	38.8	(± 7.2)[§]	35.8	(±13.5)	38.0	(± 7.9)
Median	**20.7%**		**31.2%**		**25.0%**		**34.2%**		**29.1%**		**35.3%**	
Range	**(12.5%–34.8%)**		**(19.9%–44.9%)**		**(14.6%–37.9%)**		**(19.4%–47.0%)**		**(15.6%–54.9%)**		**(22.4%–54.6%)**	

*Multiple years of BRFSS data were combined to obtain stable prevalence estimates. Combined sample size = 71,517. Questions about fruit and vegetable consumption were included in the BRFSS only in even-numbered years.
†Confidence interval. CIs were calculated by multiplying the standard error by 1.96.
§$p<0.05$.
¶Standard error ≥30% of the estimate.

TABLE 8. Percentage of persons aged ≥55 years who ate fruits and vegetables ≥5 times daily, by race,* age group, and sex — United States, Behavioral Risk Factor Surveillance System (BRFSS), 1994 and 1996†

	Race			
	White		Black	
Age group (yrs)/Sex	%	(95% CI§)	%	(95% CI)
55–64				
Men	21.8	(±1.3)	17.7	(±4.5)
Women	32.7	(±1.2)	24.1	(±3.2)
Total	**27.5**	**(±0.9)**	**21.3**	**(±2.6)**
65–74				
Men	28.2	(±1.5)	16.7	(±4.2)
Women	37.0	(±1.2)	29.0	(±3.7)
Total	**33.2**	**(±0.9)**	**24.3**	**(±2.9)**
≥75				
Men	29.8	(±2.0)	20.8	(±6.7)
Women	38.6	(±1.4)	23.8	(±4.4)
Total	**35.4**	**(±1.2)**	**22.9**	**(±3.6)**

*Race-specific data are presented only for blacks and whites because sample sizes for other racial groups were too small for meaningful analysis.
†Multiple years of BRFSS data were combined to obtain stable prevalence estimates. Combined sample size = 71,517. Questions about fruit and vegetable consumption were included in the BRFSS in even-numbered years.
§Confidence interval. CIs were calculated by multiplying the standard error by 1.96.

self-reported BRFSS data on height and weight (*36*). Therefore, the prevalence of overweight in this report might underestimate the actual prevalence of overweight among older adults.

Drinking and Driving

Drinking and driving is a health risk associated with motor vehicle-related injury. In a 1993 study, drivers aged ≥65 years increased their risk for a motor-vehicle crash by nearly threefold by drinking and driving (*37*). How alcohol mediates its effect on older persons — through cognition, motor function, and memory — is unknown and subject to ongoing research (*38*). In addition, prescription medication use, which is more prevalent among older adults, can potentiate the effect of alcohol and impair driving more than alcohol alone (*38*).

An encouraging finding is that the prevalence of alcohol use decreases with increasing age (*30*). An estimated 2%–4% of U.S. adults aged ≥60 years meet the *Diagnostic and Statistical Manual of Mental Disorders III* criteria for alcohol abuse or dependence (*39*). This report examined only one component of alcohol abuse — drinking and driving. Although the prevalence of alcohol use for the 50 states and District of Columbia combined was low (approximately 1%) for persons aged ≥65 years, data were obtained from self-reports and, therefore, are subject to under-reporting.

TABLE 9. Percentage of persons aged ≥55 years who are physically inactive, by age group and state — United States, Behavioral Risk Factor Surveillance System (BRFSS), 1994 and 1996*

State	Age group (yrs) 55–64 %	55–64 (95% CI†)	65–74 %	65–74 (95% CI)	≥75 %	≥75 (95% CI)
Alabama	42.7	(±5.5)	50.7	(± 4.3)	55.9	(± 5.7)
Alaska	24.5	(±6.9)	51.4	(±11.6)	53.2	(±16.7)
Arizona	30.6	(±5.3)	32.5	(± 5.7)	39.5	(± 6.7)
Arkansas	43.6	(±4.9)	42.0	(± 4.9)	52.9	(± 6.3)
California	24.5	(±3.3)	22.0	(± 3.1)	26.1	(± 4.3)
Colorado	24.2	(±4.9)	23.2	(± 5.1)	33.9	(± 7.3)
Connecticut	25.7	(±5.1)	33.7	(± 4.9)	41.1	(± 6.3)
Delaware	46.8	(±4.9)	43.5	(± 4.7)	58.8	(± 5.9)
District of Columbia	47.6	(±6.5)	53.8	(± 6.3)	53.3	(± 8.0)
Florida	31.8	(±3.5)	28.9	(± 2.9)	34.4	(± 3.7)
Georgia	50.8	(±5.1)	58.2	(± 4.1)	62.1	(± 6.9)
Hawaii	31.6	(±5.7)	21.4	(± 4.3)	31.1	(± 7.4)
Idaho	27.9	(±4.1)	30.4	(± 4.3)	35.1	(± 5.9)
Illinois	33.1	(±4.7)	37.3	(± 5.1)	40.0	(± 6.1)
Indiana	36.9	(±4.5)	34.8	(± 4.1)	51.6	(± 5.3)
Iowa	36.8	(±3.9)	32.8	(± 3.5)	46.5	(± 4.1)
Kansas	38.5	(±5.9)	43.7	(± 5.1)	51.3	(± 5.5)
Kentucky	57.9	(±4.3)	53.9	(± 3.5)	68.2	(± 4.3)
Louisiana	39.9	(±5.3)	39.7	(± 5.5)	57.0	(± 7.1)
Maine	43.0	(±5.7)	47.7	(± 5.5)	46.0	(± 6.7)
Maryland	38.4	(±3.5)	43.1	(± 3.7)	55.3	(± 4.9)
Massachusetts	30.4	(±5.5)	32.6	(± 5.5)	38.4	(± 6.5)
Michigan	27.3	(±4.1)	29.9	(± 4.3)	43.9	(± 6.3)
Minnesota	25.6	(±3.1)	30.8	(± 3.5)	44.5	(± 3.9)
Mississippi	47.1	(±5.3)	44.2	(± 5.3)	58.8	(± 6.3)
Missouri	38.3	(±5.9)	36.2	(± 5.3)	48.0	(± 6.3)
Montana	25.6	(±5.3)	30.6	(± 5.1)	43.0	(± 6.5)
Nebraska	30.4	(±4.5)	30.6	(± 4.3)	42.9	(± 5.1)
Nevada	27.0	(±5.3)	26.2	(± 5.5)	37.5	(± 9.4)
New Hampshire	29.9	(±5.5)	35.1	(± 5.9)	49.1	(± 7.3)
New Jersey	34.9	(±5.5)	37.6	(± 4.9)	50.3	(± 6.7)
New Mexico	26.1	(±5.9)	27.5	(± 6.5)	34.2	(± 7.8)
New York	41.3	(±4.3)	41.0	(± 4.5)	51.3	(± 4.9)
North Carolina	49.1	(±4.7)	50.4	(± 4.1)	62.1	(± 5.1)
North Dakota	41.9	(±5.3)	43.5	(± 4.9)	52.4	(± 5.3)
Ohio	47.4	(±6.1)	42.1	(± 5.5)	54.7	(± 6.7)
Oklahoma	39.7	(±5.3)	43.8	(± 4.1)	58.9	(± 5.5)
Oregon	24.5	(±3.5)	22.7	(± 3.5)	34.9	(± 4.7)
Pennsylvania	32.4	(±3.5)	33.2	(± 3.1)	44.3	(± 4.5)
Rhode Island	30.6	(±7.1)	31.3	(± 7.3)	42.8	(± 8.0)
South Carolina	36.8	(±5.1)	34.7	(± 5.5)	42.8	(± 7.4)
South Dakota	41.3	(±5.1)	41.6	(± 4.7)	52.2	(± 5.1)
Tennessee	46.6	(±4.1)	49.7	(± 3.9)	55.7	(± 4.9)
Texas	35.1	(±5.7)	35.1	(± 6.3)	44.4	(± 8.2)
Utah	24.5	(±4.5)	24.8	(± 4.9)	37.8	(± 6.5)
Vermont	27.9	(±4.1)	29.0	(± 4.1)	39.6	(± 5.1)
Virginia	28.9	(±5.1)	38.7	(± 5.3)	41.5	(± 7.4)
Washington	23.8	(±3.3)	21.3	(± 3.3)	29.6	(± 4.5)
West Virginia	50.9	(±4.3)	52.0	(± 4.3)	61.2	(± 4.9)
Wisconsin	25.9	(±5.3)	27.8	(± 5.3)	47.2	(± 7.6)
Wyoming	24.6	(±4.5)	24.8	(± 4.9)	36.3	(± 6.7)
Median	**33.1%**		**35.1%**		**46.0%**	
Range	**(23.8%–57.9%)**		**(21.3%–58.2%)**		**(26.1%–68.2%)**	

*Multiple years of BRFSS data were combined to obtain stable prevalence estimates. Questions about physical activity were included in the BRFSS only in even-numbered years. Combined sample size = 71,517.

†Confidence interval. CIs were calculated by multiplying the standard error by 1.96.

TABLE 10. Percentage of persons aged ≥55 years who were physically inactive, by region,* age group, and race† — United States, Behavioral Risk Factor Surveillance System (BRFSS), 1994 and 1996§

Age group (yrs)/Race	Northeast		Midwest		South		West	
	%	(95% CI¶)	%	(95% CI)	%	(95% CI)	%	(95% CI)
55–64								
White	33.8	(± 2.2)	34.4	(± 1.9)	37.9	(±1.6)	24.1	(± 1.9)
Black	46.3	(± 7.6)	46.5	(± 7.4)	53.0	(±3.9)	30.8	(±15.9)
Total	**35.5**	**(± 2.1)**	**35.2**	**(± 1.8)**	**40.2**	**(±1.5)**	**25.3**	**(± 1.9)**
65–74								
White	36.2	(± 2.0)	34.9	(± 1.8)	38.1	(±1.5)	23.0	(± 1.9)
Black	42.5	(± 9.2)	44.5	(± 7.2)	58.3	(±3.7)	35.8	(±16.4)
Total	**36.8**	**(± 2.0)**	**35.5**	**(± 1.7)**	**41.1**	**(±1.5)**	**23.7**	**(± 1.9)**
≥75								
White	46.3	(± 2.6)	46.6	(± 2.2)	47.5	(±2.1)	30.3	(± 2.5)
Black	58.3	(±11.9)	62.2	(±11.2)	63.9	(±5.3)	—	**
Total	**46.8**	**(± 2.5)**	**47.6**	**(± 2.1)**	**49.4**	**(±2.0)**	**30.4**	**(± 2.5)**

*Northeast=Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont; Midwest=Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin; South=Alabama, Arkansas, Delaware, District of Columbia, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, and West Virginia; and West=Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming.

†Race-specific data are presented only for blacks and whites because sample sizes for other racial groups were too small for meaningful analysis.

§Multiple years of BRFSS data were combined to obtain stable prevalence estimates. Questions about physical activity were included in the BRFSS only in even-numbered years. Combined sample size = 71,517.

¶Confidence interval. CIs were calculated by multiplying the standard error by 1.96.

**Standard error ≥30% of the estimate.

Inadequate Fruit and Vegetable Consumption

Since 1991, a national educational program, 5-A-Day, has advocated that persons in the United States eat ≥5 servings of fruits and vegetables daily. Diets rich in fruits and vegetables, which contain essential nutrients and vitamins, have been associated with a reduction in cardiovascular disease and some cancers (*40–42*). Fruits and vegetables also contribute dietary fiber, which has beneficial effects on the gastrointestinal tract. High-fiber diets have been associated with a reduction in diverticular disease and constipation, common problems among older adults (*43*).

The findings in this report indicate that a small percentage of persons reported eating fruits and vegetables ≥5 times daily. However, the percentage increased with increasing age. This finding is consistent with those of other food-intake studies using the same or a different methodology (*44–47*).

The findings in this report also indicate that the prevalence of consumption of fruits and vegetables ≥5 times daily varied by state and region. Mississippi or Louisiana had the lowest prevalence of daily fruit and vegetable consumption for the three age

groups (55–64, 65–74, and ≥75 years). The states with the highest reported consumption of fruits and vegetables included other southern states, the Midwest, and the West. Regional analyses for adults aged 55–64 and 65–74 years indicated the Midwest to have among the lowest prevalences of fruit and vegetable consumption and the West and Northeast to have among the highest prevalences. These state and regional differences might reflect local availability of fresh produce, socioeconomic conditions that enable the purchase and daily consumption of fruits and vegetables, or cultural patterns of food preparation and dietary preferences and suggest that regional comparisons might not adequately describe fruit and vegetable consumption in the United States.

Racial differences in consumption of fruits and vegetables ≥5 times daily were observed in this and other food-intake reports (*44,45*). For every age group, a greater proportion of whites than blacks reported eating fruits and vegetables ≥5 times daily. Race-specific differences might reflect economic status and cultural patterns that influence dietary practices. For example, although educational attainment was not analyzed in this report, it has been positively associated with dietary consumption of fruits and vegetables (*44,46*). This association might account for some of the race-specific differences observed in this study.

Findings of the sex-specific analysis in this report suggest that women were more likely than men to have eaten fruits and vegetables ≥5 times daily. In contrast, findings of the Continuing Surveys of Food Intake by Individuals (CSFII) study, which used 3-day diet records, indicated that men aged ≥60 years ate more servings of fruits and vegetables than women the same age (*46*). One possible explanation for the contrasting sex-specific difference in the findings of these two studies is that, in the CSFII study, the unit of measure was total servings per day; whereas, in the BRFSS questions about food intake, the unit of measure was number of times eaten per day. In addition, in CSFII, mixed dishes that included fruits or vegetables (e.g., stew) were included toward the summed total servings. Furthermore, part of the sex-specific discrepancy in the findings of food-frequency studies and diet-record studies can be accounted for if men actually eat fruits and vegetables less frequently than women but eat greater quantities at each occasion. However, when the number of servings of fruits and vegetables was normalized to 1000 calories, women had eaten a greater number of daily servings than men (*47*).

This analysis is subject to at least two limitations. First, because BRFSS respondents self-reported frequency of fruit and vegetable consumption for as long as 1 year preceding the interview, the data were subject to recall bias. A validation study of the BRFSS food-frequency methodology documented that BRFSS estimates were lower than those based on diet records (*48*). Although BRFSS estimates are not appropriate for assessing achievement of national goals (e.g., *Health People 2000* objectives), the data serve an important function — monitoring changes within state-specific populations over time. Second, the BRFSS data in this report assessed consumption of servings of individual fruits and vegetables (i.e., excluded mixed dishes that included fruits and/or vegetables) by older adults. Additional studies are needed to further examine factors affecting fruit and vegetable consumption in this population.

Altering dietary habits requires behavior change and enabling resources. In some instances, enabling resources might be as basic as adequate dentition, availability of

TABLE 11. Percentage of persons aged ≥55 years who are physically inactive, by age group, sex, and state — United States, Behavioral Risk Factor Surveillance System (BRFSS), 1994 and 1996*

State	Age group (yrs)											
	55–64				65–74				≥75			
	Men		Women		Men		Women		Men		Women	
	%	(95% CI†)	%	(95% CI)	%	(95% CI)	%	(95% CI)	%	(95% CI)	%	(95% CI)
Alabama	38.8	(± 9.3)	46.0	(± 6.6)	49.7	(± 7.7)	51.3	(± 5.1)	54.8	(±10.6)	56.5	(± 6.7)
Alaska	20.9	(± 9.3)	28.8	(±10.1)	45.9	(±17.0)	56.4	(±15.6)	§	§	61.1	(±20.0)
Arizona	29.7	(± 8.1)	31.4	(± 7.1)	32.6	(± 9.2)	32.5	(± 6.7)	33.6	(±11.4)	43.1	(± 7.8)
Arkansas	46.9	(± 7.9)	40.7	(± 5.9)	37.4	(± 8.5)	45.8	(± 5.8)	42.4	(±12.4)	58.5	(± 6.8)¶
California	26.1	(± 5.2)	23.0	(± 4.2)	18.0	(± 4.6)	25.0	(± 4.5)¶	17.0	(± 6.2)	31.6	(± 5.5)¶
Colorado	22.5	(± 7.4)	25.9	(± 6.2)	24.0	(± 7.8)	22.5	(± 6.5)	28.0	(±11.5)	36.9	(± 9.3)
Connecticut	23.6	(± 8.3)	27.6	(± 6.3)	29.8	(± 7.4)	37.0	(± 6.4)	30.6	(±10.3)	45.8	(± 7.6)¶
Delaware	48.1	(± 7.5)	45.6	(± 6.3)	36.9	(± 7.3)	48.5	(± 6.1)¶	52.9	(±10.3)	62.2	(± 6.9)
District of Columbia	47.5	(± 9.7)	47.6	(± 8.6)	63.3	(± 9.4)	48.3	(± 8.1)¶	50.2	(±13.8)	55.0	(±10.0)
Florida	32.6	(± 5.3)	31.2	(± 4.6)	26.6	(± 4.3)	30.7	(± 3.9)	26.8	(± 5.8)	39.6	(± 4.9)¶
Georgia	49.6	(± 7.5)	51.8	(± 6.8)	57.0	(± 6.1)	59.1	(± 5.6)	67.3	(±11.8)	60.1	(± 8.2)
Hawaii	29.1	(± 8.5)	33.9	(± 7.7)	18.8	(± 6.9)	23.4	(± 5.4)	27.6	(±11.0)	35.7	(± 9.0)
Idaho	31.5	(± 6.6)	24.5	(± 5.2)	36.0	(± 7.4)	25.8	(± 5.3)¶	31.7	(±10.3)	37.3	(± 7.3)
Illinois	32.7	(± 7.0)	33.5	(± 6.5)	32.6	(± 8.0)	40.5	(± 6.5)	30.2	(± 9.9)	45.5	(± 7.4)¶
Indiana	34.9	(± 6.6)	38.7	(± 6.1)	31.4	(± 6.8)	37.4	(± 5.4)	43.6	(± 9.6)	55.9	(± 6.3)¶
Iowa	40.3	(± 6.3)	33.6	(± 4.9)	35.1	(± 5.6)	31.0	(± 4.8)	43.1	(± 7.7)	48.2	(± 4.9)
Kansas	44.7	(± 8.9)	32.9	(± 7.6)¶	46.8	(± 8.3)	41.5	(± 6.4)	47.7	(± 9.9)	53.6	(± 6.5)
Kentucky	60.1	(± 6.7)	56.0	(± 5.3)	48.7	(± 5.8)	57.9	(± 4.5)¶	58.5	(± 8.9)	72.8	(± 4.4)¶
Louisiana	40.4	(± 8.7)	39.5	(± 6.8)	33.6	(± 8.9)	43.8	(± 6.5)	54.1	(±12.3)	58.9	(± 8.6)
Maine	42.4	(± 8.4)	43.5	(± 7.5)	47.3	(± 8.6)	48.1	(± 6.9)	36.9	(±11.0)	51.2	(± 7.7)¶
Maryland	37.7	(± 5.3)	39.0	(± 4.9)	41.7	(± 6.0)	44.0	(± 4.7)	48.0	(± 8.1)	59.9	(± 6.1)¶
Massachusetts	31.3	(± 8.6)	29.7	(± 7.3)	29.4	(± 8.8)	34.9	(± 7.2)	30.5	(±10.4)	43.1	(± 7.9)
Michigan	24.0	(± 6.0)	30.2	(± 5.5)	24.2	(± 6.2)	34.1	(± 5.7)¶	44.2	(±11.9)	43.7	(± 7.2)
Minnesota	27.5	(± 4.8)	23.7	(± 3.7)	31.2	(± 5.6)	30.4	(± 4.5)	40.9	(± 7.1)	46.5	(± 4.4)
Mississippi	50.6	(± 8.2)	44.2	(± 6.7)	44.7	(± 8.6)	43.9	(± 6.6)	51.1	(±11.9)	62.9	(± 7.2)
Missouri	46.2	(±10.9)	32.7	(± 6.3)¶	32.2	(± 8.3)	40.1	(± 6.6)	37.5	(±12.9)	53.4	(± 6.7)¶
Montana	25.8	(± 8.1)	25.4	(± 6.7)	33.3	(± 7.9)	28.5	(± 6.4)	35.8	(±10.3)	48.3	(± 8.1)
Nebraska	36.1	(± 7.5)	25.0	(± 5.1)¶	31.5	(± 7.0)	29.9	(± 5.4)	43.6	(± 9.6)	42.6	(± 5.8)

Nevada	20.2	(± 6.5)	34.0	(± 7.6)¶	22.1	(± 7.6)	29.9	(± 7.9)	35.2	(±16.0)	38.9	(±11.9)
New Hampshire	31.8	(± 8.4)	28.1	(± 7.2)	33.7	(± 9.0)	36.1	(± 7.4)	42.0	(±12.6)	53.9	(± 9.0)
New Jersey	34.5	(± 9.0)	35.3	(± 6.6)	28.7	(± 7.3)	43.6	(± 6.3)¶	45.8	(±12.0)	53.2	(± 7.9)
New Mexico	24.6	(± 9.9)	27.6	(± 7.0)	23.9	(±10.5)	30.2	(± 8.1)	28.4	(±13.0)	38.8	(± 9.7)
New York	39.9	(± 6.6)	42.5	(± 5.5)	37.4	(± 7.2)	43.6	(± 5.4)	42.3	(± 9.1)	55.9	(± 5.8)¶
North Carolina	47.4	(± 7.5)	50.7	(± 6.0)	46.6	(± 6.6)	52.9	(± 5.3)	57.5	(± 9.3)	64.8	(± 5.8)
North Dakota	40.9	(± 7.8)	42.8	(± 7.3)	49.0	(± 7.6)	38.5	(± 6.2)¶	47.4	(±10.1)	55.3	(± 5.8)
Ohio	46.0	(± 9.7)	48.7	(± 7.7)	42.3	(± 8.7)	42.0	(± 6.8)	47.9	(±13.3)	58.5	(± 7.8)
Oklahoma	39.2	(± 8.3)	40.1	(± 6.8)	43.1	(± 6.0)	44.4	(± 5.7)	54.1	(± 9.6)	61.9	(± 6.3)
Oregon	22.4	(± 5.2)	26.5	(± 4.7)	21.9	(± 5.5)	23.4	(± 4.4)	29.4	(± 7.9)	37.7	(± 5.7)
Pennsylvania	28.0	(± 5.1)	36.3	(± 4.6)¶	30.0	(± 4.9)	35.5	(± 4.2)	34.1	(± 7.7)	49.5	(± 5.4)¶
Rhode Island	31.4	(±10.3)	29.9	(± 9.8)	26.5	(±11.5)	34.8	(± 9.2)	—	§	53.6	(± 9.8)
South Carolina	31.8	(± 7.7)	41.0	(± 6.3)	29.9	(± 9.1)	38.5	(± 6.6)	38.7	(±15.4)	44.6	(± 8.2)
South Dakota	45.0	(± 7.6)	37.7	(± 6.8)	39.5	(± 7.0)	43.5	(± 5.9)	44.3	(± 9.1)	56.5	(± 5.6)¶
Tennessee	45.9	(± 6.6)	47.2	(± 5.1)	46.6	(± 6.4)	51.9	(± 5.1)	47.6	(± 9.1)	60.2	(± 5.4)¶
Texas	40.5	(± 9.4)	30.2	(± 6.9)	28.3	(± 9.8)	40.8	(± 7.8)	50.9	(±16.6)	41.3	(± 8.9)
Utah	23.4	(± 6.4)	25.4	(± 6.3)	22.2	(± 7.5)	27.1	(± 6.5)	28.2	(±10.4)	43.7	(± 7.6)¶
Vermont	27.9	(± 6.2)	28.0	(± 5.3)	23.3	(± 6.3)	33.3	(± 5.6)¶	27.6	(± 8.4)	46.1	(± 6.3)¶
Virginia	28.8	(± 8.2)	29.0	(± 6.3)	40.7	(± 9.4)	37.4	(± 6.4)	37.4	(±12.9)	44.1	(± 9.2)
Washington	23.3	(± 4.9)	24.2	(± 4.4)	19.2	(± 4.9)	22.9	(± 4.3)	19.7	(± 6.4)	36.2	(± 5.9)¶
West Virginia	51.1	(± 6.8)	50.7	(± 5.3)	45.3	(± 7.6)	56.8	(± 5.0)¶	52.1	(± 8.8)	66.8	(± 5.2)¶
Wisconsin	30.4	(± 8.4)	21.7	(± 6.6)	24.3	(± 8.2)	30.4	(± 6.9)	49.5	(±15.0)	45.7	(± 8.2)
Wyoming	25.7	(± 6.9)	23.5	(± 5.5)	28.5	(± 7.8)	21.1	(± 5.6)	28.5	(±12.8)	39.6	(± 7.8)
Median	**32.7%**		**33.5%**		**32.6%**		**37.4%**		**42.3%**		**49.5%**	
Range	**(20.2%–60.1%)**		**(21.7%–56.0%)**		**(18.0%–63.3%)**		**(21.1%–59.1%)**		**(17.0%–67.3%)**		**(31.6%–72.8%)**	

*Multiple years of BRFSS data were combined to obtain stable prevalence estimates. Questions about physical activity were included in the BRFSS only in even-numbered years. Combined sample size = 71,517.
†Confidence interval. CIs were calculated by multiplying the standard error by 1.96.
§Standard error ≥30% of the estimate.
¶$p<0.05$.

TABLE 12. Percentage of persons aged ≥55 years who were physically inactive, by race,* age group, and sex — United States, Behavioral Risk Factor Surveillance System (BRFSS), 1994 and 1996

	White		Black	
Age group (yrs)/Sex	%	(95% CI§)	%	(95% CI)
55–64				
Men	33.8	(±1.5)	47.5	(±5.6)
Women	33.1	(±1.2)	49.0	(±3.9)
Total	**33.4**	**(±1.0)**	**48.3**	**(±3.3)**
65–74				
Men	31.0	(±1.4)	47.4	(±5.9)
Women	36.3	(±1.2)	52.8	(±4.0)
Total	**34.0**	**(±0.9)**	**50.7**	**(±3.3)**
≥75				
Men	37.1	(±2.1)	59.2	(±8.2)
Women	47.4	(±1.4)	61.0	(±5.4)
Total	**43.7**	**(±1.2)**	**60.4**	**(±4.5)**

*Race/ethnicity data are presented only for blacks and whites because sample sizes for other racial groups were too small for meaningful analysis.
†Multiple years of BRFSS data were combined to obtain stable prevalence estimates. Questions about fruit and vegetable consumption were included in the BRFSS in even-numbered years. Combined sample size = 71,517.
§Confidence interval. CIs were calculated by multiplying the standard error by 1.96.

fresh fruits and vegetables, and the financial means and transportation to purchase such produce.

Physical Inactivity

The importance of vigorous physical activity in maintaining cardiovascular health is well documented (*49*). However, during the previous 10 years, several studies and the *Surgeon General's Report on Physical Activity and Health* concluded that moderate-intensity physical activity (e.g., brisk walking) also is associated with a variety of health benefits for adults of every age (*50,51*). These benefits include reduced morbidity and mortality associated with coronary heart disease; control of blood pressure, glucose levels, and cholesterol; and improved weight management. As a result of these documented benefits of moderate physical activity, several agencies and professional groups have recommended that all adults obtain a minimum of 30 minutes of moderate-intensity physical activity (equivalent to brisk walking) on most days of the week (*50,51*). Older adults particularly can benefit from the effects of physical activities that include strength training (*52*). Although moderate-intensity physical activity is attainable for most adults, <30% of the U.S. population attains this level, and older adults are even less active (*53,54*).

Lack of physical activity is also associated with several musculoskeletal problems that can negatively affect functional ability. Aging, which is associated with lower levels of physical activity, is also associated with loss of muscle mass (sarcopenia) and strength (*55*); physical inactivity is associated with bone loss and osteoporosis (*9,56*).

Osteoporosis, sarcopenia, and muscle weakness (directly or indirectly) are risk factors for falls and, therefore, fractures, in older adults. As an overall prevention strategy, older adults are encouraged to remain active throughout aging to help preserve functional ability and prevent frailty.

Despite all the benefits of physical activity, approximately one third of all BRFSS respondents aged ≥65 years in 1994 and 1996 reported no leisure-time physical activity during the month preceding the interview. Other physical activity studies have reported similar findings among older adults (*54,57*).

In this report, physical inactivity varied by state and region. The prevalence of physical inactivity for adults aged ≥55 years was highest in Kentucky or Georgia and lowest in Washington or California. Regional analyses for persons aged 55–64 and 65–74 years support these state-specific findings, with southern states reporting among the highest levels of physical inactivity and western states reporting among the lowest levels. These differences might be associated with socioeconomic and regional factors that promote and provide opportunities for physical activity.

The finding in this report of higher levels of physical inactivity among blacks than whites is consistent with other physical activity studies (*50,53,57*). Functional impairment and disability are associated with inactivity and are more prevalent among black older adults than white older adults (*58*). The relation between race and physical activity might reflect differences in education or income, which are factors positively associated with physical activity (*59,60*).

Although persons of all ages experience barriers to physical activity, older adults are particularly vulnerable. For example, in a study of perceived neighborhood safety, persons aged ≥65 years were less likely than younger persons to report walking as a leisure-time physical activity if they perceived their neighborhood to be unsafe; however, for younger adults, neighborhood safety did not affect leisure-time walking behavior (*61*). This finding is particularly important because walking is the most common type of physical activity among adults and has been associated with independent living in a longitudinal study (*62*) and with decreased morbidity (*9*).

Even persons with chronic diseases (e.g., arthritis) are encouraged to maintain some level of activity (*63*) or are prescribed physical activity as a part of rehabilitation (*32*). Nonetheless, a physical activity program should be individually tailored, should consider potential barriers and environmental safety for each person, and can require initial monitoring.

The prevalence estimates of physical inactivity in this report are not comparable with other published studies on physical activity because of methodologic issues. Many physical activity studies estimate the prevalence of those persons who did not meet the frequency and duration of physical activity as defined in the particular study; however, this report estimates the prevalence of no activity during leisure time. In addition, work-related activity, housework, yard work, and childcare activities are excluded from BRFSS and most other physical activity surveys and could vary by socioeconomic status. In addition, because this study is based on self-reports, the estimates are subject to misclassification of activity status.

TABLE 13. Prevalence of current cigarette smoking* among persons aged ≥55 years, by state and sex — United States, Behavioral Risk Factor Surveillance System (BRFSS), 1995–1997†

State	Men						Women						Total					
	55–64 yrs		65–74 yrs		≥75 yrs		55–64 yrs		65–74 yrs		≥75 yrs		55–64 yrs		65–74 yrs		≥75 yrs	
	%	(95% CI§)	%	(95% CI)	%	(95% CI)	%	(95% CI)	%	(95% CI)	%	(95% CI)	%	(95% CI)	%	(95% CI)	%	(95% CI)
Alabama	25.2	(± 5.5)	22.6	(±5.5)	—	¶	21.9	(±4.2)	14.6	(±3.7)	6.0	(±3.3)	**23.4**	(±3.4)	**18.0**	(±3.1)	**6.0**	(±2.6)
Alaska	31.7	(±10.3)	12.9	(±7.5)	—	¶	24.2	(±7.7)	12.9	(±6.5)	—	¶	**28.2**	(±6.6)	**12.9**	(±4.9)	—	¶
Arizona	26.2	(± 6.3)	13.4	(±4.4)	—	¶	18.0	(±5.1)	11.3	(±3.7)	5.5	(±2.6)	**21.9**	(±4.1)	**12.3**	(±2.8)	**5.5**	(±2.1)
Arkansas	28.1	(± 5.5)	15.6	(±4.8)	—	¶	26.9	(±4.3)	14.7	(±3.4)	7.7	(±3.0)	**27.5**	(±3.4)	**15.1**	(±2.8)	**7.8**	(±2.6)
California	21.6	(± 3.8)	12.4	(±3.2)	9.1	(±3.8)	16.4	(±3.0)	11.0	(±2.5)	6.6	(±2.0)	**18.9**	(±2.4)	**11.6**	(±2.0)	**7.6**	(±1.9)
Colorado	22.5	(± 5.6)	12.1	(±4.4)	—	¶	21.1	(±4.7)	11.5	(±3.3)	7.4	(±3.2)	**21.8**	(±3.6)	**11.8**	(±2.7)	**6.9**	(±2.6)
Connecticut	17.5	(± 5.4)	9.7	(±4.1)	—	¶	18.6	(±4.5)	16.5	(±4.5)	5.9	(±2.6)	**18.0**	(±3.5)	**13.6**	(±3.1)	**6.8**	(±2.4)
Delaware	21.5	(± 5.1)	13.1	(±3.9)	6.2	(±3.6)	20.6	(±4.0)	14.2	(±3.1)	6.1	(±2.8)	**21.0**	(±3.2)	**13.7**	(±2.4)	**6.2**	(±2.2)
District of Columbia	21.7	(± 7.7)	22.9	(±9.7)	—	¶	18.1	(±7.0)	—	¶	—	¶	**19.7**	(±5.1)	**13.4**	(±4.9)	—	¶
Florida	23.4	(± 4.0)	12.1	(±2.8)	5.4	(±2.1)	21.2	(±3.2)	13.7	(±2.3)	8.8	(±2.3)	**22.2**	(±2.5)	**13.0**	(±1.8)	**7.4**	(±1.6)
Georgia	28.6	(± 5.6)	17.3	(±4.0)	—	¶	19.5	(±4.4)	10.4	(±2.8)	4.4	(±2.6)	**23.8**	(±3.6)	**13.3**	(±2.4)	**5.9**	(±2.6)
Hawaii	17.2	(± 5.8)	13.3	(±4.4)	—	¶	13.3	(±4.5)	12.8	(±3.8)	—	¶	**15.1**	(±3.6)	**13.0**	(±2.9)	**4.5**	(±2.4)
Idaho	20.7	(± 4.2)	13.7	(±3.5)	5.3	(±3.0)	14.7	(±2.9)	13.0	(±2.6)	8.0	(±2.5)	**17.7**	(±2.5)	**13.4**	(±2.1)	**6.9**	(±1.9)
Illinois	24.0	(± 4.6)	12.4	(±4.0)	—	¶	19.6	(±3.7)	13.6	(±3.1)	5.9	(±2.3)	**21.7**	(±3.0)	**13.1**	(±2.5)	**5.1**	(±1.8)
Indiana	21.7	(± 4.3)	16.4	(±4.3)	5.1	(±3.0)	24.3	(±4.3)	10.7	(±2.9)	6.3	(±2.3)	**23.0**	(±3.1)	**13.1**	(±2.4)	**5.9**	(±1.9)
Iowa	23.0	(± 4.1)	13.7	(±3.1)	9.7	(±3.4)	21.3	(±3.1)	10.4	(±2.2)	5.9	(±1.7)	**22.1**	(±2.6)	**11.8**	(±1.9)	**7.2**	(±1.6)
Kansas	20.8	(± 5.1)	13.3	(±4.3)	7.9	(±4.4)	18.8	(±4.4)	11.7	(±3.0)	5.3	(±2.1)	**19.8**	(±3.4)	**12.4**	(±2.5)	**6.2**	(±2.1)
Kentucky	32.4	(± 5.0)	22.3	(±4.0)	9.9	(±4.1)	26.4	(±3.4)	17.4	(±2.7)	7.7	(±2.0)	**29.3**	(±3.0)	**19.6**	(±2.3)	**8.5**	(±2.0)
Louisiana	26.4	(± 6.4)	17.0	(±5.2)	10.1	(±5.7)	20.4	(±4.5)	10.8	(±3.6)	4.6	(±2.7)	**23.2**	(±3.8)	**13.4**	(±3.0)	**6.5**	(±2.7)
Maine	21.9	(± 5.3)	9.6	(±4.0)	—	¶	20.1	(±4.5)	12.9	(±3.8)	5.3	(±3.1)	**21.0**	(±3.4)	**11.5**	(±2.8)	**6.4**	(±2.9)
Maryland	17.6	(± 3.5)	15.8	(±3.9)	6.9	(±3.1)	18.2	(±3.1)	11.4	(±2.5)	7.9	(±2.5)	**17.9**	(±2.3)	**13.3**	(±2.2)	**7.5**	(±2.0)
Massachusetts	21.0	(± 5.9)	14.1	(±5.4)	—	¶	20.7	(±5.0)	15.0	(±4.0)	8.0	(±3.5)	**20.8**	(±3.9)	**14.7**	(±3.2)	**6.9**	(±2.7)
Michigan	21.7	(± 4.6)	16.2	(±4.6)	8.3	(±4.5)	22.9	(±3.9)	12.0	(±3.1)	5.4	(±2.4)	**22.3**	(±3.0)	**13.8**	(±2.7)	**6.5**	(±2.2)
Minnesota	21.9	(± 3.4)	14.6	(±3.3)	5.1	(±2.6)	17.4	(±2.9)	11.9	(±2.5)	5.9	(±1.6)	**19.6**	(±2.2)	**13.1**	(±2.0)	**5.6**	(±1.4)
Mississippi	28.0	(± 6.2)	21.2	(±6.6)	12.5	(±6.6)	22.0	(±4.6)	13.5	(±3.5)	—	¶	**24.7**	(±3.8)	**16.7**	(±3.4)	**6.9**	(±2.9)
Missouri	25.3	(± 5.8)	16.0	(±5.7)	—	¶	24.6	(±4.8)	16.2	(±3.8)	8.7	(±3.6)	**24.9**	(±3.7)	**16.1**	(±3.3)	**6.7**	(±2.5)
Montana	20.9	(± 6.1)	13.9	(±4.6)	8.0	(±4.4)	19.8	(±4.5)	17.1	(±4.5)	7.0	(±2.9)	**20.4**	(±3.8)	**15.6**	(±3.2)	**7.4**	(±2.4)
Nebraska	20.2	(± 4.9)	15.7	(±4.3)	7.8	(±3.7)	20.8	(±4.1)	12.2	(±3.0)	5.3	(±1.9)	**20.5**	(±3.2)	**13.7**	(±2.5)	**6.2**	(±1.8)
Nevada	28.0	(± 6.9)	22.3	(±8.6)	—	¶	27.9	(±6.1)	29.5	(±7.2)	16.8	(±9.3)	**28.0**	(±4.6)	**26.0**	(±5.6)	**14.7**	(±6.8)
New Hampshire	17.2	(± 5.6)	14.2	(±4.9)	—	¶	20.1	(±4.9)	12.7	(±4.0)	9.9	(±4.4)	**18.7**	(±3.6)	**13.3**	(±3.0)	**7.9**	(±3.3)
New Jersey	21.8	(± 6.0)	14.0	(±5.1)	7.6	(±4.3)	17.8	(±3.9)	11.8	(±3.2)	4.9	(±2.2)	**19.6**	(±3.5)	**12.7**	(±2.8)	**6.0**	(±2.1)
New Mexico	16.8	(± 5.8)	9.3	(±4.7)	17.1	(±8.5)	16.0	(±4.5)	13.9	(±4.4)	7.9	(±3.7)	**16.4**	(±3.6)	**11.9**	(±3.2)	**11.9**	(±4.4)

New York	21.2	(± 4.4)	10.8	(±3.1)	—	¶	21.9	(±3.7)	12.3	(±2.7)	8.9	(±3.3)	**21.6**	(±2.8)	**11.7**	(±2.0)	**8.4**	(±2.6)
North Carolina	25.9	(± 4.3)	17.2	(±3.6)	9.6	(±3.8)	19.5	(±3.3)	13.6	(±2.5)	5.8	(±1.9)	**22.5**	(±2.7)	**15.1**	(±2.1)	**7.2**	(±1.8)
North Dakota	23.1	(± 5.6)	11.5	(±3.6)	7.5	(±4.0)	20.7	(±4.9)	13.8	(±3.6)	4.7	(±2.3)	**21.9**	(±3.7)	**12.7**	(±2.6)	**5.7**	(±2.1)
Ohio	21.5	(± 5.3)	11.8	(±3.7)	—	¶	21.7	(±4.7)	11.1	(±3.2)	5.9	(±2.9)	**21.6**	(±3.5)	**11.4**	(±2.4)	**6.2**	(±2.3)
Oklahoma	25.0	(± 5.7)	8.7	(±2.5)	—	¶	25.3	(±5.0)	6.9	(±2.1)	5.0	(±2.3)	**25.2**	(±3.8)	**7.7**	(±1.6)	**5.0**	(±1.9)
Oregon	18.2	(± 3.9)	12.5	(±3.5)	6.6	(±3.3)	18.1	(±3.4)	16.4	(±3.3)	6.2	(±2.2)	**18.2**	(±2.6)	**14.8**	(±2.4)	**6.4**	(±1.9)
Pennsylvania	19.3	(± 3.7)	12.2	(±2.9)	9.2	(±4.9)	21.5	(±3.2)	14.2	(±2.6)	7.0	(±2.1)	**20.5**	(±2.4)	**13.4**	(±2.0)	**7.7**	(±2.2)
Rhode Island	19.6	(± 5.0)	13.5	(±4.6)	6.6	(±3.8)	21.4	(±4.9)	11.5	(±3.3)	8.3	(±3.3)	**20.5**	(±3.5)	**12.3**	(±2.7)	**7.7**	(±2.5)
South Carolina	25.2	(± 6.0)	18.6	(±5.2)	—	¶	19.7	(±4.3)	9.3	(±2.9)	—	¶	**22.3**	(±3.6)	**13.3**	(±2.8)	**4.4**	(±2.2)
South Dakota	19.1	(± 4.6)	16.0	(±4.2)	9.8	(±4.3)	18.7	(±4.5)	11.3	(±3.2)	5.4	(±2.3)	**18.9**	(±3.1)	**13.4**	(±2.6)	**7.0**	(±2.2)
Tennessee	26.5	(± 5.1)	15.3	(±4.4)	8.1	(±3.9)	23.6	(±4.0)	15.6	(±3.4)	5.3	(±2.2)	**25.0**	(±3.2)	**15.5**	(±2.7)	**6.3**	(±2.0)
Texas	26.1	(± 6.4)	19.9	(±6.3)	15.3	(±8.0)	13.5	(±3.6)	13.1	(±3.9)	6.7	(±3.2)	**19.6**	(±3.7)	**16.0**	(±3.5)	**10.0**	(±3.7)
Utah	14.7	(± 4.1)	9.2	(±4.2)	—	¶	9.2	(±3.1)	6.9	(±2.6)	—	¶	**11.8**	(±2.5)	**7.9**	(±2.4)	**2.6**	(±1.4)
Vermont	17.4	(± 4.1)	10.9	(±3.5)	—	¶	19.3	(±3.5)	11.6	(±2.9)	7.4	(±3.3)	**18.4**	(±2.7)	**11.3**	(±2.2)	**5.3**	(±2.2)
Virginia	23.4	(± 6.1)	15.7	(±5.3)	—	¶	18.6	(±3.6)	13.6	(±3.7)	6.7	(±3.2)	**20.8**	(±3.5)	**14.5**	(±3.1)	**7.8**	(±3.4)
Washington	23.2	(± 4.0)	12.8	(±3.5)	—	¶	19.5	(±3.4)	14.7	(±3.0)	8.6	(±2.5)	**21.3**	(±2.6)	**13.9**	(±2.3)	**7.0**	(±1.9)
West Virginia	21.5	(± 4.6)	19.5	(±4.2)	7.0	(±3.4)	24.4	(±3.7)	16.4	(±3.1)	7.9	(±2.3)	**23.0**	(±2.9)	**17.7**	(±2.5)	**7.6**	(±1.9)
Wisconsin	18.4	(± 5.0)	11.2	(±3.9)	—	¶	17.1	(±4.3)	10.6	(±3.3)	4.3	(±2.2)	**17.8**	(±3.3)	**10.8**	(±2.5)	**4.7**	(±2.0)
Wyoming	22.6	(± 4.7)	18.7	(±4.7)	—	¶	19.7	(±3.7)	14.7	(±3.4)	8.6	(±3.1)	**21.2**	(±3.0)	**16.6**	(±2.8)	**8.5**	(±2.7)
Median	**21.8%**		**13.9%**		**8.0%**		**20.1%**		**12.9%**		**6.3%**		**21.2%**		**13.3%**		**6.8%**	
Range	**(14.7%–32.4%)**		**(8.7%–22.9%)**		**(5.1%–18.1%)**		**(9.2%–27.9%)**		**(6.9%–29.5%)**		**(4.3%–11.8%)**		**(11.8%–29.3%)**		**(7.7%–26.0%)**		**(2.6%–14.7%)**	

* Defined in 1995 as ever having smoked ≥100 cigarettes and smoking every day or some days, and in 1996 and 1997 as ever having smoked ≥100 cigarettes and currently smoking every day or some days.
† Multiple years of BRFSS data were combined to obtain stable prevalence estimates. Combined sample size = 116,690.
§ Confidence interval. CIs were calculated by multiplying the standard error by 1.96.
¶ Standard error ≥30% of the estimate.

TABLE 14. Prevalence of current* and former† cigarette smoking among persons aged ≥55 years, by selected characteristics — United States, National Health Interview Survey (NHIS), 1993–1995§

	Men						Women						Total					
	55–64 years		65–74 years		≥75 years		55–64		65–74		≥75 years		55–64		65–74		≥75 years	
Characteristic	%	(95% CI¶)	%	(95% CI)	%	(95% CI)	%	(95% CI)	%	(95% CI)	%	(95% CI)	%	(95% CI)	%	(95% CI)	%	(95% CI)
Race/Ethnicity**																		
White, non-Hispanic																		
Current	24.6	(±1.9)	15.9	(± 1.6)	7.9	(± 1.7)	22.5	(±1.7)	14.1	(±1.2)	8.0	(±1.1)	**23.5**	(±1.3)	**14.9**	(±1.0)	**7.9**	(±1.0)
Former	48.9	(±2.2)	56.4	(± 2.3)	57.3	(± 3.1)	30.1	(±1.9)	31.2	(±1.9)	23.1	(±1.7)	**39.2**	(±1.5)	**42.5**	(±1.5)	**36.2**	(±1.7)
Black, non-Hispanic																		
Current	37.4	(±6.0)	29.9	(± 7.0)	22.2	(± 8.8)	22.2	(±4.6)	16.4	(±3.8)	6.6	(±3.4)	**28.8**	(±3.7)	**22.1**	(±3.7)	**12.0**	(±3.8)
Former	34.8	(±6.1)	40.6	(± 7.2)	44.3	(±10.0)	20.7	(±4.3)	24.5	(±4.2)	17.1	(±5.7)	**26.8**	(±3.8)	**31.4**	(±4.0)	**26.5**	(±5.4)
Hispanic††																		
Current	25.2	(±7.0)	—	¶¶	—	¶¶	14.0	(±6.5)	7.3	(±4.2)	—	¶¶	**18.9**	(±4.9)	**7.6**	(±3.3)	—	¶¶
Former	38.1	(±7.5)	59.4	(±10.2)	55.5	(±17.5)	19.3	(±5.9)	20.2	(±6.0)	—	¶¶	**27.5**	(±4.9)	**36.1**	(±5.7)	**25.3**	(±10.9)
Education (yrs)																		
≤8																		
Current	34.9	(±5.4)	21.9	(± 4.0)	12.6	(± 3.5)	25.6	(±5.0)	13.9	(±2.9)	6.0	(±1.8)	**30.3**	(±3.6)	**17.9**	(±2.4)	**8.4**	(±1.7)
Former	38.3	(±5.5)	52.4	(± 5.0)	57.3	(± 4.9)	19.3	(±4.3)	21.6	(±3.3)	15.2	(±2.7)	**29.0**	(±3.6)	**37.0**	(±3.1)	**30.5**	(±2.7)
9–11																		
Current	42.2	(±5.5)	20.8	(± 4.6)	6.0	(± 3.1)	30.9	(±5.2)	18.5	(±3.0)	7.8	(±2.6)	**36.0**	(±3.8)	**19.4**	(±2.6)	**7.2**	(±2.0)
Former	36.0	(±5.6)	54.5	(± 5.9)	62.6	(± 7.4)	29.4	(±4.6)	30.1	(±3.8)	22.3	(±4.2)	**32.4**	(±3.6)	**39.8**	(±3.4)	**35.9**	(±4.1)
12																		
Current	24.6	(±3.0)	17.5	(± 3.0)	10.1	(± 3.5)	21.0	(±2.3)	12.3	(±1.8)	10.1	(±2.0)	**22.5**	(±1.8)	**14.2**	(±1.6)	**10.1**	(±1.8)
Former	51.0	(±3.3)	55.3	(± 3.8)	56.5	(± 5.8)	27.5	(±2.5)	30.8	(±2.7)	23.7	(±2.9)	**37.2**	(±2.1)	**40.0**	(±2.2)	**34.9**	(±2.9)
13–15																		
Current	26.0	(±4.5)	13.0	(± 4.0)	9.1	(± 4.6)	21.3	(±3.2)	13.1	(±2.8)	7.9	(±2.6)	**23.5**	(±2.7)	**13.0**	(±2.3)	**8.4**	(±2.5)
Former	50.6	(±5.3)	56.5	(± 5.7)	57.9	(± 7.4)	30.6	(±4.0)	35.0	(±4.2)	33.6	(±5.1)	**39.9**	(±3.3)	**44.2**	(±3.5)	**43.2**	(±4.3)
≥16																		
Current	14.5	(±3.5)	10.6	(± 2.7)	—	¶¶	13.7	(±3.5)	14.1	(±4.0)	4.9	(±2.5)	**14.2**	(±2.5)	**12.0**	(±2.2)	**4.7**	(±1.9)
Former	48.8	(±4.5)	57.7	(± 4.6)	47.7	(± 6.9)	34.7	(±4.6)	31.7	(±5.0)	24.9	(±5.5)	**43.5**	(±3.3)	**47.6**	(±3.5)	**36.9**	(±4.6)

Poverty status¶¶																	
At or above																	
Current	24.2	(±1.9)	15.6	(± 1.6)	8.6	(± 1.8)	21.0	(±1.7)	13.5	(±1.3)	7.8	(±1.3)	22.6	(±1.3)	14.5	(±1.0)	8.1	(±1.0)
Former	48.7	(±2.1)	56.0	(± 2.3)	57.5	(± 3.1)	29.5	(±1.9)	31.8	(±2.0)	24.4	(±2.0)	38.9	(±1.4)	43.0	(±1.4)	38.2	(±1.9)
Below																		
Current	36.7	(±8.2)	27.8	(± 7.6)	23.0	(±11.5)	29.6	(±5.3)	17.8	(±3.6)	7.9	(±2.7)	32.5	(±4.8)	20.8	(±3.2)	11.2	(±3.2)
Former	34.2	(±9.3)	45.7	(± 8.6)	40.0	(±10.4)	21.9	(±4.7)	21.3	(±4.0)	18.4	(±3.8)	26.8	(±5.1)	28.8	(±4.0)	23.0	(±3.7)
Unknown																		
Current	41.2	(±8.5)	21.0	(± 5.7)	7.2	(± 3.5)	23.6	(±6.4)	14.2	(±3.5)	7.7	(±2.5)	29.9	(±5.0)	16.8	(±3.0)	7.6	(±2.0)
Former	31.6	(±8.2)	52.8	(± 7.0)	56.9	(± 8.5)	23.8	(±5.2)	24.7	(±4.3)	16.3	(±3.1)	26.5	(±4.3)	35.6	(±3.8)	28.2	(±3.8)
Total																		
Current	**25.8**	**(±1.8)**	**16.7**	**(± 1.5)**	**9.3**	**(± 1.7)**	**21.9**	**(±1.6)**	**13.9**	**(±1.1)**	**7.8**	**(±1.1)**	**23.8**	**(±1.2)**	**15.2**	**(±0.9)**	**8.4**	**(±0.9)**
Former	**47.0**	**(±2.0)**	**55.2**	**(± 2.1)**	**56.4**	**(± 2.9)**	**28.4**	**(±1.7)**	**30.0**	**(±1.7)**	**22.2**	**(±1.6)**	**37.2**	**(±1.3)**	**41.2**	**(±1.3)**	**35.1**	**(±1.7)**

*Ever having smoked ≥100 cigarettes and at the time of the interview smoking every day or some days. Excludes 151 respondents for whom smoking status was unknown.
†Ever having smoked ≥100 cigarettes but not currently smoking.
§Multiple years of NHIS data were combined to obtain stable prevalence estimates. Combined sample size = 17,754.
¶Confidence interval. CIs were calculated by multiplying the standard error by 1.96.
**Race/ethnicity data are presented only for non-Hispanic blacks, non-Hispanic whites, and Hispanics because sample sizes for other racial/ethnic groups were too small for meaningful analysis.
††Persons of Hispanic origin can be of any race.
§§Standard error ≥30% of point estimate.
¶¶Poverty statistics are based on definitions developed by the Social Security Administration in 1964 (which were subsequently modified by federal interagency committees in 1969 and 1980) and prescribed by the Office of Mangagement and Budget as the standard to be used by federal agencies for statistical purposes.

Smoking

Despite the lower prevalence of smoking among older adults, older smokers are at greater risks from smoking because they have smoked longer, tend to be heavier smokers, and are more likely to suffer from smoking-related illnesses (*11*). Older adults who smoke have increased risks for cardiovascular disease, stroke, cancer, and respiratory disease (*64–74*). Surveillance for smoking among older adults is instrumental in identifying groups at high risk and in planning and evaluating tobacco control interventions.

State-specific and national data regarding the prevalence of smoking among men and women aged 55–64 years indicate that the United States has not met the *Healthy People 2000* objectives of reducing cigarette smoking among adults (aged ≥18 years) to ≤15% (objective no. 3.4) (*75*). Among persons aged ≥65 years, the prevalence of current smoking continues to decline with increasing age. This decline is the result of an increased prevalence of quitting and differential mortality among smokers and nonsmokers. Regardless of age group, the prevalence of smoking remains highest among black men.

To reduce the prevalence of smoking among older adults, smoking-cessation programs are needed that take into account ethnic and sex-specific differences in smoking behavior. During 1993–1995, participants of the NHIS were asked, "Would you like to completely stop/quit smoking cigarettes?" Responses for smokers aged ≥55 years indicated racial/ethnic and sex-specific differences in the desire to quit. Overall, non-Hispanic blacks (66.2% [95% CI=60.2%–72.2%]) were more likely than non-Hispanic whites (60.6% [95% CI=58.2%–63.0%]) and Hispanics (57.8% [95% CI=47.7%–67.9%]) to indicate the desire to completely stop smoking cigarettes. In addition, non-Hispanic black (68.7% [95% CI=64.8%–72.6%]) and Hispanic (66.5% [95% CI=58.9%–74.1%]) women were more likely than non-Hispanic black (64.3% [95% CI=56.0%–72.6%]) and Hispanic (50.7% [95% CI=37.9%–63.5%]) men to indicate that they would like to completely stop smoking cigarettes (CDC, unpublished data, 1993–1995). However, because of the small sample sizes of Hispanic men and women, this finding should be interpreted with caution.

In addition, during the 1990 NHIS, current smokers were asked, "Have you ever made a serious attempt to stop smoking cigarettes?", "When was the start of your most recent serious quit attempt?", and "How long did you actually stay off cigarettes that time?". For current smokers, response categories used for the analysis were never tried to quit; tried to quit, but not in the past year; and tried to quit in the past year. For former smokers, response categories used for the analysis were abstinent <3 months, abstinent 3–11 months, abstinent 1–4 years, abstinent 5–9 years, and abstinent ≥10 years. Findings indicated that women were more likely than men to be recent quitters. Among ever smokers aged ≥55 years, women were more likely than men to be current smokers who had never tried to quit (15.8% versus 11.0%, respectively); tried to quit, but not in the past year (14.0% versus 10.6%, respectively); and tried to quit in the past year (8.5% versus 6.0%, respectively). Approximately half (46.5%) of ever smokers aged ≥55 years were former smokers who had been abstinent for ≥10 years. Men were more likely than women to be abstinent for ≥10 years (51.6% versus 39.9%, respectively) (CDC, unpublished data, 1990).

Health-care providers should be informed that smoking-cessation counseling, even brief advice to quit smoking, can be effective in encouraging older persons to quit smoking. According to guidelines from the Agency for Health Care Policy and Research, all health-care practitioners should repeatedly and consistently deliver smoking-cessation interventions to their patients (*76*). In 1992, the NHIS Cancer Control Supplement documented that 59% of current smokers aged ≥55 years examined by a physician during the year preceding the survey reported that they had been advised to quit smoking by their physician. Overall, smokers who reported that a physician advised them to quit smoking during the preceding year were significantly more likely to report planning to quit during the next 6 months than smokers who were not advised to quit (CDC, unpublished data, 1992).

Methods of smoking cessation vary across age groups and should be considered when planning smoking-cessation programs for older adults. In 1998, the American Lung Association, in conjunction with Yankelovich Partners, conducted a survey of adult smokers who had unsuccessfully attempted to quit smoking cigarettes. Methods most frequently used among adult smokers aged ≥50 years included quitting "cold turkey" (68.0%), using the nicotine patch (47.0%), quitting gradually (slowly reducing the number of cigarettes smoked) (41.0%), and chewing regular gum (27.0%). Smokers aged ≥50 years were significantly less likely than smokers aged 18–34 years to chew regular gum as a method of smoking cessation. Older smokers (aged ≥50 years) were significantly more likely than smokers aged 18–34 years to choose the nicotine patch prescribed by a doctor (20.0%) (*77*).

The prevalence estimates of smoking among older adults in this report are subject to at least two limitations. First, some sample sizes were inadequate to assess differences among the three age stratifications by demographic subgroups. Second, the BRFSS and the NHIS randomly sample the noninstitutionalized adult population, which is in better health compared with older adults who are institutionalized. Approximately 5% of persons aged ≥65 years and 20% of persons aged ≥85 years live in long-term care institutions (*78*).

Projected increases in the population of older adults ensure continued medical and economic costs associated with smoking. Public health initiatives and smoking-cessation programs aimed at older adults are necessary to reduce premature morbidity and mortality later in life.

CONCLUSION

Prevalences of the five health risks discussed in this report are affected by aging processes, including survival bias (i.e., persons with healthier life practices outliving those with less healthy lifestyles). In this report, the prevalences of drinking and driving, overweight, and smoking decreased with increasing age; the prevalence of fruit and vegetable consumption increased with advancing age. These trends might be associated with a combination of changes in behavior as age increases and with survival bias. However, physical inactivity increased with advancing age, and this finding most likely reflects the greater prevalence of chronic diseases and disability that are also associated with increasing age (*79*).

Older adults in the United States are a heterogeneous group that differ in health risks by age, sex, race, residential state, and socioeconomic status. Similarly,

interventions need to be tailored for specific communities or groups to effectively change behavior and reduce health risks.

Overweight, drinking and driving, inadequate fruit and vegetable consumption, physical inactivity, and smoking are associated with the development of many diseases and injuries. Some diseases are strongly associated with a particular health risk (e.g., lung cancer's association with cigarette smoking); other disease etiologies are multifactorial, with each health risk contributing additional risk of disease occurrence (e.g., the combined effects of smoking, physical inactivity, excess bodyweight, and poor diet on cardiovascular disease). This multifactorial nature can result in confounding of one health risk by another because persons who have one health risk are more likely to have another (*80*). In addition, interventions to modify one health risk can effectively reduce another (e.g., increasing physical activity can result in loss of excess weight). Therefore, caution should be exercised when interpreting the benefits of health risk reduction for a disease because the benefit could be attributable to reduction of another health risk or a combination thereof.

More intervention studies, many of which use a multifactorial approach, are involving older adults. These studies are limited in number but have the encouraging message that altering poor health behaviors and reducing health risks, even late in life, is beneficial. As more of these special population studies are conducted, planning better interventions for older adults will be possible.

As the population of older adults increases and changes, ongoing surveillance is needed to monitor the prevalence of health risks in this population. Surveillance data can be used for public health policy development and as a tool to assess outcomes. However, future surveys might need to be expanded to adequately represent the diversity of older adults in the United States.

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EXHIBIT

TABLE A. Percentage of persons aged ≥55 years who are overweight,* by age group and state — United States, Behavioral Risk Factor Surveillance System (BRFSS), 1996 and 1997†

State	Age group (yrs) 55–64 %	55–64 (95% CI§)	65–74 %	65–74 (95% CI)	≥75 %	≥75 (95% CI)
Alabama	43.5	(±4.7)	37.6	(± 4.7)	27.4	(± 5.1)
Alaska	42.3	(±8.8)	50.2	(±10.6)	17.8	(± 9.5)
Arizona	31.3	(±5.7)	23.8	(± 4.9)	18.9	(± 4.9)
Arkansas	34.6	(±4.7)	37.2	(± 4.9)	20.5	(± 4.7)
California	37.4	(±3.8)	29.3	(± 3.4)	19.1	(± 3.5)
Colorado	29.1	(±5.0)	31.4	(± 5.4)	20.3	(± 5.5)
Connecticut	36.7	(±6.0)	31.2	(± 5.1)	26.6	(± 5.7)
Delaware	44.1	(±4.9)	38.4	(± 4.5)	23.1	(± 4.6)
District of Columbia	40.1	(±6.2)	39.7	(± 7.2)	24.8	(± 7.1)
Florida	38.8	(±3.8)	33.5	(± 3.1)	24.1	(± 3.3)
Georgia	35.4	(±4.7)	28.0	(± 4.1)	20.2	(± 6.3)
Hawaii	34.8	(±5.5)	18.9	(± 4.1)	12.4	(± 4.3)
Idaho	38.9	(±4.0)	33.6	(± 3.8)	25.4	(± 4.1)
Illinois	38.0	(±4.0)	36.0	(± 4.4)	29.3	(± 5.1)
Indiana	39.7	(±4.4)	37.7	(± 4.8)	26.6	(± 5.0)
Iowa	43.3	(±3.8)	39.0	(± 3.6)	28.6	(± 3.5)
Kansas	35.6	(±5.2)	30.3	(± 4.7)	25.9	(± 5.1)
Kentucky	41.2	(±3.6)	34.4	(± 3.2)	24.7	(± 3.7)
Louisiana	42.6	(±5.4)	37.0	(± 5.4)	29.1	(± 6.8)
Maine	37.6	(±5.2)	28.0	(± 5.0)	24.5	(± 5.4)
Maryland	41.8	(±3.9)	36.4	(± 3.9)	27.4	(± 5.0)
Massachusetts	34.9	(±5.9)	27.5	(± 5.3)	23.9	(± 5.8)
Michigan	46.6	(±4.5)	39.4	(± 4.9)	31.9	(± 5.6)
Minnesota	38.5	(±3.3)	37.5	(± 3.6)	26.4	(± 3.3)
Mississippi	47.6	(±5.3)	34.3	(± 5.2)	23.9	(± 5.6)
Missouri	36.8	(±5.2)	32.1	(± 5.1)	23.7	(± 5.0)
Montana	35.3	(±5.2)	30.6	(± 4.9)	23.0	(± 5.0)
Nebraska	39.5	(±4.8)	34.7	(± 4.3)	25.1	(± 4.0)
Nevada	35.8	(±6.8)	28.3	(± 7.4)	21.5	(±11.2)
New Hampshire	32.3	(±5.9)	31.2	(± 5.5)	31.2	(± 6.5)
New Jersey	37.9	(±4.5)	36.3	(± 4.3)	26.9	(± 4.8)
New Mexico	37.1	(±5.7)	29.3	(± 6.0)	19.9	(± 5.7)
New York	40.8	(±4.0)	32.9	(± 3.8)	24.7	(± 4.0)
North Carolina	36.6	(±3.9)	34.7	(± 3.5)	23.8	(± 4.0)
North Dakota	46.1	(±5.4)	35.3	(± 4.9)	26.0	(± 4.4)
Ohio	42.0	(±5.2)	36.7	(± 4.5)	27.3	(± 5.0)
Oklahoma	38.0	(±5.3)	23.0	(± 3.3)	21.1	(± 4.5)
Oregon	38.4	(±4.0)	30.6	(± 4.1)	22.9	(± 4.2)
Pennsylvania	42.8	(±3.7)	33.6	(± 3.4)	30.2	(± 4.5)
Rhode Island	37.4	(±5.2)	34.0	(± 5.1)	27.1	(± 5.3)
South Carolina	42.2	(±5.2)	33.5	(± 5.4)	23.3	(± 5.6)
South Dakota	36.4	(±4.7)	38.5	(± 4.5)	23.0	(± 3.9)
Tennessee	37.2	(±3.9)	32.7	(± 4.0)	24.1	(± 4.1)
Texas	41.1	(±5.4)	34.1	(± 5.3)	22.9	(± 6.0)
Utah	37.7	(±5.3)	30.3	(± 5.1)	21.9	(± 5.5)
Vermont	41.0	(±4.2)	33.2	(± 4.3)	23.9	(± 4.3)
Virginia	37.5	(±4.8)	33.5	(± 5.4)	24.6	(± 5.8)
Washington	37.3	(±3.9)	33.7	(± 4.0)	22.2	(± 4.1)
West Virginia	40.8	(±4.2)	37.0	(± 4.0)	22.3	(± 4.1)
Wisconsin	44.1	(±5.4)	40.0	(± 5.4)	26.6	(± 5.7)
Wyoming	36.0	(±4.3)	32.0	(± 4.4)	29.3	(± 5.5)
Median	**38.0%**		**33.6%**		**24.1%**	
Range	**(29.1%–47.6%)**		**(18.9%–50.2%)**		**(12.4%–31.9%)**	

*Defined using the National Health and Nutrition Examination Survey II (NHANES II)-based definition of overweight — for men, body mass index (BMI) ≥27.8 kg/m^2 and, for women, BMI ≥27.3 kg/m^2.

†Multiple years of BRFSS data were combined to obtain stable prevalence estimates.

§Confidence interval. CIs were calculated by multiplying the standard error by 1.96.

TABLE B. Percentage of persons aged ≥55 years who are overweight,* by age group, sex, and state — United States, Behavioral Risk Factor Surveillance System (BRFSS), 1996 and 1997†

	Age group (yrs)											
	55–64				65–74				≥75			
	Men		Women		Men		Women		Men		Women	
State	%	(95% CI§)	%	(95% CI)	%	(95% CI)	%	(95% CI)	%	(95% CI)	%	(95% CI)
Alabama	45.3	(± 7.3)	41.9	(± 6.0)	24.3	(± 8.2)	39.7	(± 5.8)	24.3	(± 9.4)	29.2	(± 5.9)
Alaska	38.5	(±12.4)	47.1	(±12.1)	55.6	(±14.7)	45.3	(±14.9)	—	¶	—	¶
Arizona	38.2	(± 8.6)	24.6	(± 7.3)	24.7	(± 7.7)	22.9	(± 6.5)	18.9	(± 8.2)	18.9	(± 6.2)
Arkansas	35.0	(± 4.7)	34.2	(± 6.0)	36.6	(± 8.1)	37.7	(± 6.0)	13.9	(± 7.0)	24.8	(± 6.1)
California	34.9	(± 5.5)	40.0	(± 5.1)	26.1	(± 4.9)	31.8	(± 4.8)	17.5	(± 5.8)	20.0	(± 4.4)
Colorado	28.8	(± 7.5)	29.3	(± 6.6)	29.5	(± 8.2)	32.9	(± 7.2)	24.0	(±10.2)	17.9	(± 6.1)
Connecticut	43.9	(± 9.6)	29.3	(± 6.4)	34.4	(± 7.6)	28.6	(± 6.8)	20.1	(± 8.4)	30.1	(± 7.5)
Delaware	45.9	(± 7.5)	42.3	(± 6.5)	35.4	(± 7.1)	40.8	(± 5.8)	21.7	(± 8.1)	24.0	(± 5.7)
District of Columbia	35.1	(± 9.6)	44.4	(± 8.5)	26.2	(±10.0)	48.5	(± 9.2)	—	¶	27.0	(± 8.3)
Florida	41.5	(± 5.9)	36.5	(± 4.7)	33.4	(± 4.8)	33.5	(± 3.9)	23.4	(± 5.0)	24.6	(± 4.3)
Georgia	38.0	(± 7.1)	33.0	(± 6.3)	24.3	(± 5.8)	30.7	(± 5.8)	12.5	(± 7.5)	23.6	(± 8.1)
Hawaii	39.7	(± 8.1)	30.2	(± 7.3)	15.6	(± 5.6)	21.4	(± 5.7)	9.5	(± 5.3)	15.8	(± 6.8)
Idaho	38.7	(± 5.9)	39.1	(± 5.5)	37.1	(± 6.2)	30.7	(± 4.5)	24.1	(± 7.1)	26.3	(± 4.9)
Illinois	38.3	(± 6.1)	37.8	(± 5.2)	34.1	(± 7.3)	37.5	(± 5.6)	26.0	(± 8.6)	31.2	(± 6.3)
Indiana	36.4	(± 6.3)	42.9	(± 6.3)	39.8	(± 7.7)	36.2	(± 5.9)	23.5	(± 8.1)	28.2	(± 6.2)
Iowa	44.4	(± 5.9)	42.3	(± 4.9)	34.5	(± 5.7)	42.6	(± 4.7)	28.5	(± 6.5)	28.7	(± 4.0)
Kansas	40.1	(± 7.7)	31.5	(± 7.1)	26.8	(± 7.4)	33.2	(± 6.1)	31.9	(± 9.8)	22.2	(± 5.4)
Kentucky	40.7	(± 5.7)	41.7	(± 4.6)	32.9	(± 5.2)	35.6	(± 4.1)	23.5	(± 7.4)	25.3	(± 4.0)
Louisiana	45.4	(± 8.6)	40.1	(± 7.0)	30.2	(± 8.3)	42.1	(± 7.0)	20.4	(±10.5)	34.0	(± 8.5)
Maine	32.4	(± 7.6)	43.0	(± 7.2)	28.6	(± 7.5)	27.5	(± 6.3)	17.4	(± 7.9)	28.6	(± 6.9)
Maryland	39.0	(± 5.6)	44.3	(± 5.3)	26.0	(± 5.2)	44.4	(± 5.3)	22.9	(± 8.0)	30.4	(± 6.4)
Massachusetts	37.9	(± 9.4)	32.1	(± 7.4)	27.8	(± 8.7)	27.3	(± 6.8)	24.4	(± 9.8)	23.5	(± 7.2)
Michigan	49.7	(± 6.9)	43.8	(± 5.7)	34.8	(± 7.8)	42.9	(± 6.3)	30.6	(±10.2)	32.6	(± 6.5)
Minnesota	38.5	(± 4.9)	38.5	(± 4.6)	35.7	(± 5.4)	39.1	(± 4.8)	25.8	(± 5.9)	26.7	(± 3.9)
Mississippi	49.4	(± 8.4)	45.9	(± 6.7)	30.5	(± 8.3)	37.1	(± 6.4)	18.3	(± 9.9)	27.1	(± 6.7)
Missouri	36.3	(± 8.0)	37.2	(± 6.7)	28.3	(± 8.1)	35.0	(± 6.4)	16.2	(± 7.8)	28.1	(± 6.3)
Montana	36.0	(± 7.9)	34.6	(± 6.5)	29.8	(± 7.4)	31.3	(± 6.2)	19.4	(± 7.9)	25.3	(± 6.2)
Nebraska	39.4	(± 7.6)	39.6	(± 5.7)	34.7	(± 6.7)	34.8	(± 5.7)	22.1	(± 7.3)	26.9	(± 4.7)

TABLE B. Percentage of persons aged ≥55 years who are overweight,* by age group, sex, and state — United States, Behavioral Risk Factor Surveillance System (BRFSS), 1996 and 1997† — Continued

State	Age group (yrs)											
	55–64				65–74				≥75			
	Men		Women		Men		Women		Men		Women	
	%	(95% CI§)	%	(95% CI)	%	(95% CI)	%	(95% CI)	%	(95% CI)	%	(95% CI)
Nevada	37.3	(±10.4)	34.3	(± 8.4)	28.3	(±11.9)	28.2	(± 8.9)	20.3	(±13.3)	22.2	(±15.7)
New Hampshire	37.1	(± 9.2)	27.4	(± 7.7)	32.7	(± 8.2)	30.0	(± 7.4)	35.6	(±11.9)	28.7	(± 7.6)
New Jersey	38.6	(± 7.0)	37.1	(± 5.8)	31.0	(± 6.8)	40.0	(± 5.5)	22.0	(± 7.3)	30.0	(± 6.3)
New Mexico	33.1	(± 8.8)	41.0	(± 7.5)	26.4	(± 9.4)	31.5	(± 7.8)	14.5	(± 8.7)	24.0	(± 7.6)
New York	39.0	(± 6.1)	42.6	(± 5.2)	32.0	(± 6.3)	33.5	(± 4.8)	19.3	(± 6.3)	28.2	(± 5.1)
North Carolina	40.5	(± 6.0)	32.9	(± 5.0)	32.5	(± 5.8)	36.4	(± 4.5)	20.7	(± 7.1)	25.5	(± 4.8)
North Dakota	50.6	(± 8.1)	41.6	(± 7.4)	36.1	(± 7.5)	34.6	(± 6.3)	23.4	(± 8.0)	27.5	(± 5.1)
Ohio	39.6	(± 7.5)	44.4	(± 7.2)	31.1	(± 6.7)	41.2	(± 6.1)	17.7	(± 8.3)	32.0	(± 6.2)
Oklahoma	43.4	(± 8.3)	33.7	(± 6.8)	21.2	(± 4.3)	24.5	(± 5.0)	14.2	(± 6.1)	25.4	(± 6.0)
Oregon	38.4	(± 5.9)	38.4	(± 5.5)	27.6	(± 7.0)	32.9	(± 4.8)	17.3	(± 6.1)	27.1	(± 5.5)
Pennsylvania	42.9	(± 5.7)	42.7	(± 4.9)	29.2	(± 4.9)	37.0	(± 4.6)	27.7	(± 9.1)	31.4	(± 5.0)
Rhode Island	40.5	(± 7.8)	34.5	(± 7.0)	30.8	(± 8.0)	36.4	(± 6.6)	18.4	(± 8.4)	31.2	(± 6.6)
South Carolina	39.6	(± 8.3)	44.5	(± 6.6)	34.9	(± 9.7)	32.3	(± 5.9)	18.7	(± 9.6)	25.7	(± 6.7)
South Dakota	36.7	(± 6.8)	36.1	(± 6.7)	33.5	(± 6.8)	42.7	(± 5.9)	18.9	(± 6.4)	25.7	(± 4.7)
Tennessee	37.1	(± 6.5)	37.2	(± 4.8)	30.2	(± 6.5)	34.6	(± 4.9)	17.0	(± 6.8)	27.9	(± 5.1)
Texas	39.3	(± 8.8)	42.8	(± 6.5)	30.2	(± 8.4)	37.0	(± 6.7)	22.2	(±10.2)	23.4	(± 7.3)
Utah	41.4	(± 7.8)	34.4	(± 6.7)	26.4	(± 7.3)	34.0	(± 6.9)	22.0	(± 9.0)	21.8	(± 6.8)
Vermont	47.6	(± 6.1)	34.2	(± 5.5)	28.7	(± 6.6)	36.7	(± 5.7)	14.9	(± 6.3)	29.4	(± 5.7)
Virginia	37.2	(± 7.9)	37.7	(± 5.7)	32.5	(± 8.6)	34.4	(± 6.6)	16.2	(± 8.6)	29.0	(± 7.5)
Washington	38.4	(± 5.7)	36.2	(± 5.4)	34.9	(± 6.3)	32.6	(± 5.2)	13.3	(± 5.2)	28.8	(± 5.9)
West Virginia	36.1	(± 6.4)	45.1	(± 5.5)	31.1	(± 6.4)	41.8	(± 5.1)	15.7	(± 6.8)	25.6	(± 5.0)
Wisconsin	46.3	(± 7.8)	41.7	(± 7.5)	37.6	(± 8.5)	41.8	(± 7.0)	26.8	(±10.2)	26.4	(± 6.6)
Wyoming	38.3	(± 6.7)	33.7	(± 5.5)	27.6	(± 6.5)	36.5	(± 6.1)	24.3	(± 9.8)	31.7	(± 6.6)
Median	**38.7%**		**38.4%**		**30.8%**		**35.0%**		**20.3%**		**27.0%**	
Range	**(28.8%–50.6%)**		**(24.6%–47.1%)**		**(15.6%–55.6%)**		**(21.4%–48.5%)**		**(9.5%–35.6%)**		**(15.8%–34.0%)**	

*Defined using the National Health and Nutrition Examination Survey II (NHANES II)-based definition of overweight — for men, body mass index (BMI) ≥27.8 kg/m^2 and, for women, BMI ≥27.3 kg/m^2.
†Multiple years of BRFSS data were combined to obtain stable prevalence estimates.
§Confidence interval. CIs were calculated by multiplying the standard error by 1.96.
¶Standard error ≥30% of the estimate.

TABLE C. Percentage of persons aged ≥55 years who are overweight,* by race,† age group, and sex — United States, Behavioral Risk Factor Surveillance System (BRFSS), 1996 and 1997§

Age group (yrs)/Sex	White		Black	
	%	(95% CI¶)	%	(95% CI)
55–64				
Men	39.9	(±1.4)	39.0	(±5.4)
Women	36.9	(±1.2)	57.9	(±3.8)
Total	**38.4**	**(±0.9)**	**49.4**	**(±3.3)**
65–74				
Men	30.6	(±1.3)	32.7	(±5.4)
Women	33.5	(±1.1)	57.4	(±4.0)
Total	**32.2**	**(±0.9)**	**47.7**	**(±3.3)**
≥75				
Men	21.1	(±1.6)	31.8	(±7.5)
Women	25.8	(±1.2)	40.6	(±5.0)
Total	**24.1**	**(±0.9)**	**37.3**	**(±4.2)**

*Defined using the National Health and Nutrition Examination Survey II (NHANES II)-based definition of overweight — for men, body mass index (BMI) ≥27.8 kg/m^2 and, for women, BMI ≥27.3 kg/m^2.

†Race-specific data are presented only for blacks and whites because sample sizes for other racial groups were too small for meaningful analysis.

§Multiple years of BRFSS data were combined to obtain stable prevalence estimates.

¶Confidence interval. CIs were calculated by multiplying the standard error by 1.96.

TABLE D. Percentage of persons aged ≥55 years who are overweight,* by region,† age group, and race§ — United States, Behavioral Risk Factor Surveillance System (BRFSS), 1996 and 1997¶

Age group (yrs)/Race	Northeast		Midwest		South		West	
	%	(95% CI**)	%	(95% CI)	%	(95% CI)	%	(95% CI)
55–64								
White	39.7	(± 2.1)	40.2	(±1.7)	37.4	(±1.6)	36.4	(± 2.1)
Black	43.8	(± 7.3)	51.8	(±6.6)	52.4	(±4.0)	41.9	(±16.3)
Total	**39.7**	**(± 2.0)**	**40.9**	**(±1.6)**	**39.6**	**(±1.5)**	**36.3**	**(± 2.2)**
65–74								
White	32.0	(± 1.9)	35.8	(±1.7)	31.1	(±1.4)	29.8	(± 2.0)
Black	43.6	(± 8.8)	46.7	(±6.8)	50.2	(±3.9)	44.3	(±16.6)
Total	**32.9**	**(± 1.8)**	**36.6**	**(±1.6)**	**33.6**	**(±1.3)**	**29.5**	**(± 2.0)**
≥75								
White	25.9	(± 2.1)	27.3	(±1.8)	22.3	(±1.6)	20.5	(± 2.1)
Black	38.6	(±11.9)	38.8	(±9.1)	37.7	(±4.9)	—	††
Total	**26.5**	**(± 2.1)**	**27.7**	**(±1.7)**	**24.0**	**(±1.5)**	**20.0**	**(± 2.0)**

*Defined using the National Health and Nutrition Examination Survey II (NHANES II)-based definition of overweight — for men, body mass index (BMI) ≥27.8 kg/m^2 and, for women, BMI ≥27.3 kg/m^2.

†Northeast=Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont; Midwest=Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin; South=Alabama, Arkansas, Delaware, District of Columbia, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, and West Virginia; and West=Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming.

§Race-specific data are presented only for blacks and whites because sample sizes for other racial groups were too small for meaningful analysis.

¶Multiple years of BRFSS data were combined to obtain stable prevalence estimates.

**Confidence interval. CIs were calculated by multiplying the standard error by 1.96.

††Standard error ≥30% of the estimate.

Surveillance for Sensory Impairment, Activity Limitation, and Health-Related Quality of Life Among Older Adults — United States, 1993–1997

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Abstract

Problem/Condition: Increases in life expectancy in the United States are accompanied by concerns regarding the cumulative impact of chronic disease and impairments on the prevalence of disability and the health status and quality of life of the growing number of older adults (defined as persons aged ≥65 years). Although older adults are the focus of these surveillance summaries, persons aged 55–64 years have also been included, when data were available, as a comparison. One important public health goal for an aging society is to minimize the impact of chronic disease and impairments on the health status of older adults, maintain their ability to live independently, and improve their quality of life. This report examines three dimensions of health status: sensory impairments, activity limitations, and health-related quality of life among older adults.

Reporting Period: This report examines data regarding activity limitations and sensory impairments for 1994 and health-related quality of life for 1993–1997.

Description of System: The 1994 National Health Interview Survey (NHIS) Core, NHIS disability supplement (NHIS-D1), and the 1994 NHIS Second Supplement on Aging (SOA II) were used to estimate vision impairments, hearing loss, and activity limitation. Data from the Behavioral Risk Factor Surveillance System (BRFSS) for 1993 through 1997 were used to estimate two general measures of health-related quality of life: a) the prevalence of self-rated fair or poor general health and b) the number of days during the preceding 30 days when respondents reported their physical or mental health was "not good."

Results: Sensory impairments are common among older adults. Among adults aged ≥70 years, 18.1% reported vision impairments, 33.2% reported hearing impairments, and 8.6% reported both hearing and vision impairments. Although older adults who reported vision and hearing impairments reported more comorbidities than their non-hearing-impaired and nonvisually impaired peers, impaired adults with sensory loss were able to sustain valued social participation roles.

Advancing age was associated with increased likelihood of difficulty in performing functional activities and instrumental and basic activities of daily living, regardless of race/ethnicity, sex, and region of residence in the United States. Unhealthy days (a continuous measure of population health-related quality of life) was consistent with self-rated health (a commonly used categorical measure) and useful in identifying subtle differences among sociodemographic groups of older adults. An important finding was that adults aged 55–64 years with low socioeconomic status (i.e., less than a high school education or an annual household income of <$15,000) reported substantially greater numbers of unhealthy days than their peers aged 65–74 years.

Interpretation: Sensory impairments are common in adults aged ≥70 years, and prevalence of activity limitations among older adults is high and associated with advancing age. Health-related quality of life is less closely related to age, particularly when health-related quality of life includes aspects of mental health.

INTRODUCTION

Increases in life expectancy in the United States are accompanied by the cumulative impact of chronic disease and impairments on the prevalence of disability and the health status and quality of life among the growing number of older adults (*1–3*). Although declines in the prevalence of disability associated with chronic disease among older adults might have occurred, advancing age is associated with an increase in the number of health conditions that can lead to disability (*4,5*). Important public health goals for older adults include minimizing the impact of chronic disease and impairments on their health status, maintaining their ability to live independently, and improving their quality of life (*6*). This report examined three dimensions of health status: sensory impairments, activity limitations, and health-related quality of life (HRQOL) among older adults.

METHODS

Vision and Hearing Impairments

Data from the 1994 National Health Interview Survey (NHIS) Core and the 1994 NHIS Second Supplement on Aging (SOA II) were used to estimate vision impairments, hearing loss, and activity limitation. NHIS is an ongoing, annual, cross-sectional household survey of the U.S. civilian, noninstitutionalized population (*7*). Whenever possible, all adult family members participate in the interview; proxy interviews are allowed, however, for elderly persons who are unable to participate because of illness or impairment. All respondents to the 1994 NHIS Core who were aged ≥70 years were included in SOA II, regardless of disability status. All respondents to SOA II who reported a disability were also administered NHIS Disability Phase 1 Supplement (NHIS-D1).

Vision impairment was defined as blindness in one eye, blindness in both eyes, or any other trouble seeing. SOA II has nine self-report items regarding vision, including questions concerning a) diagnoses of cataracts and glaucoma; b) blindness in one or both eyes; c) use of glasses; d) trouble seeing, even with glasses; and e) cataract

surgery, lens implant, contact lenses, and use of magnifiers. A general question regarding "trouble seeing even with glasses" is also included in SOA II.

Hearing impairment was defined as deafness in one ear, deafness in both ears, or any other trouble hearing. SOA II has six questions related to hearing loss, including self-reported deafness in one or both ears, any other trouble hearing, cochlear implant, and use of hearing aids. Data for 8,767 respondents who were aged ≥70 years were included in the vision and hearing analyses.

Estimates of vision and hearing impairments were made for the U.S. population aged ≥70 years, by race (black, white, and other [Native American and Asian/Pacific Islander]), Hispanic or non-Hispanic ethnicity, sex, and region of residence in the United States*. Data were also available for activity of daily living and instrumental activity of daily living limitations, prevalence of selected chronic diseases, opportunities for social interaction, and self-rated health.

Activity Limitations

Data from the 1994 NHIS-D1 were used to estimate limitations in three areas of routine activity in the population aged ≥55 years: functional activities, activities of daily living (ADL), and instrumental activities of daily living (IADL). Data were collected on all members of sampled households in face-to-face interviews; proxy responses were accepted when a household member could not be interviewed. The 1994 NHIS-D1 included questions regarding each respondent's ability to perform a) a set of basic functional activities (i.e., lifting, climbing stairs, walking, sustained standing, bending, reaching, and grasping); b) ADL (i.e., bathing, dressing, getting around inside the home, toileting, eating, and getting in and out of beds and chairs); and c) IADL (i.e., shopping, managing money, using the telephone, performing household chores, and preparing meals). Estimates of activity limitations in these three activity areas were made for the U.S. population aged ≥55 years, grouped in 10-year intervals by race/ethnicity, sex, and region of residence in the United States. Data regarding 22,486 respondents were used for these estimates of activity limitations.

Respondents were defined as having an activity limitation in basic functional activities, ADL, or IADL if they reported one or more difficulties in the activity area. Results were analyzed by age, race† Hispanic§ or non-Hispanic ethnicity, and sex. Native Americans and Asians/Pacific Islanders were categorized as other because of small age-group–specific sample sizes.

*Northeast=Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont; Midwest=Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin; South=Alabama, Arkansas, Delaware, District of Columbia, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, and West Virginia; and West=Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming.

†Race/ethnicity data are presented only for non-Hispanic whites, non-Hispanic blacks, and Hispanics because sample sizes for other racial/ethnic groups were too small for meaningful analysis.

§Persons of Hispanic origin can be of any race.

Health-Related Quality of Life (HRQOL)

Data from the Behavioral Risk Factor Surveillance System (BRFSS) for the years 1993–1997 were used to estimate a) the prevalence of self-reported fair or poor general health and b) the number of days during the preceding 30 days when respondents reported their physical or mental health was "not good". BRFSS is an ongoing, state-based, random-digit–dialed, telephone survey of U.S. civilian, noninstitutionalized persons aged ≥18 years, which tracks health- and safety-related characteristics. This survey collects self-reported information on behaviors related to health status (with the understanding that self-reports can overestimate or underestimate the prevalence of certain behaviors). BRFSS data were weighted to reflect the age, sex, and race distribution of each state's estimated population for the year of the survey. State data were aggregated to produce nationwide estimates for the 50 states and the District of Columbia.

From 1993 through 1997, BRFSS respondents were asked to rate their general health on a 5-point scale from "excellent" to "poor." Each respondent was asked, "Now, thinking about your physical health, which includes physical illness and injury, for how many days during the past 30 days was your physical health not good?" and "Now, thinking about your mental health, which includes stress, depression, and problems with emotions, for how many days during the past 30 days was your mental health not good?" Respondents were also asked questions regarding their sex, race/ethnicity, highest educational level, annual household income, occupational status, marital status, whether they had one or more of several chronic health conditions, and selected health behaviors and characteristics (e.g., being overweight or smoking).

This report presents analyses of two measures of HRQOL that are among a set of 25 community health profile indicators recommended by the Institute of Medicine in a 1997 report (*8*). First, overall self-rated health was defined as a dichotomous variable indicating fair or poor self-rated health (1) or not (0). In addition, an unhealthy days index was derived by adding the responses from the two questions regarding the number of days during the preceding 30 days when the respondents' physical or mental health was not good, with the restriction that the unhealthy days index could not exceed 30 days. The minimal overlap assumption used in this index was found in other analyses to be the most reasonable and straight-forward approach for combining the mental and physical health measures.

HRQOL prevalence data were collected from 1993 through 1997 from each of the 50 participating BRFSS states and the District of Columbia, except for Wyoming in 1993, Rhode Island in 1994, and the District of Columbia in 1995. To ensure adequate sample sizes for analyses of subpopulations (e.g., age and sex subgroup comparisons within each state), data for 1993 through 1997 were combined to complete these analyses. To account for the complex sample design of both NHIS and BRFSS, SUDAAN statistical software was used for analyses (*9*). Except where noted, response categories of "don't know/not sure," "refused," and categories indicating data were missing are excluded from analyses. Data were not reported when the standard error was ≥30% of the prevalence estimate.

RESULTS

Vision Impairments

Vision impairment, which is defined as blindness in one eye, blindness in both eyes, or any other trouble seeing, was reported by 18.1% of adults aged ≥70 years, representing approximately 3.6 million persons (Table 1) (*10*). Men were less likely than women to report vision impairments, and adults in the northeast reported a lower frequency of vision impairments than other respondents. Blindness in both eyes was reported by 1.7% of adults aged ≥70 years, and an additional 4.4% reported blindness in one eye (Table 2). Although all potential causes of vision impairments were not reported, 24.5% of older adults reported having a cataract, and 7.9% reported having glaucoma. Approximately 91.5% of respondents reported wearing glasses, 17.0% reported using a magnifier, and 15.1% reported having a lens implant to treat a cataract.

Older adults who reported any vision impairment were compared with those who did not report vision impairments to determine whether either group was more likely to have certain activity limitations, comorbidities and secondary health conditions, and participation restrictions (Table 3). Older adults who had visual impairments reported substantial differences in activity limitations compared with those who did not report vision impairments. Older adults with vision impairments were more than twice as likely as older adults without vision impairments to report difficulty walking (43.3% versus 20.2%), difficulty getting outside (28.6% versus 10.4%), difficulty getting into and out of a bed or chair (22.1% versus 9.3%), difficulty managing medication (11.8% versus 4.4%), and difficulty preparing meals (18.7% versus 6.7%). Older adults who had vision impairments were more likely than sighted, older adults to have experienced falls during the preceding 12 months (31.2% versus 19.2%) and to have suffered a broken hip (7.1% versus 4.2%). Moreover, older adults who had vision impairments were more likely than sighted, older adults to have experienced hypertension (53.7% versus 43.1%), heart disease (30.2% versus 19.7%), stroke (17.4% versus 7.3%), and depression or anxiety (13.3% versus 7.0%).

Unlike the findings for comorbidities and activity limitations, proportional differences in participation in selected social roles were small. Older adults who reported vision impairments were less likely than sighted, older adults to get together with friends (65.3% versus 72.5%) and less likely to go out to eat at a restaurant (55.7% versus 65.1%).

Hearing Impairments

Hearing impairment, which is defined as deafness in one ear, deafness in both ears, or any other trouble hearing, was reported by 33.2% of older adults, representing approximately 6.7 million persons in 1994 (Table 1). Women, blacks, and adults residing in the northeast were less likely than other respondents to report hearing loss. Deafness in both ears was reported by 7.3% of older adults, and an additional 8.3% reported deafness in one ear (Table 2). Whereas one third of the population reported hearing impairments, 11.6% (2,343,000 adults) reported using a hearing aid during the preceding 12 months. Of older adults, 0.1% reported having a cochlear implant.

Older adults who had hearing loss also reported greater difficulties with functional activities than those without hearing impairments (Table 3). However, these activity

TABLE 1. Percentage distribution of hearing and vision limitations among adults aged ≥70 years, by selected sociodemographic characteristics — United States, National Health Interview Second Supplement on Aging, 1994*

Characteristic	Vision impairment n = 1,397			Hearing impairment n = 2,905			Vision and hearing impairment n = 675		
	Population	%	(95% CI†)	Population	%	(95% CI)	Population	%	(95% CI)
Population aged ≥70 yrs	3,652,626	18.1	(±1.1)	6,697,497	33.2	(±1.3)	1,724,277	8.6	(±0.7)
Sex									
Male	1,319,000	16.4	(±1.4)	3,214,181	40.0	(±1.9)	726,200	9.0	(±1.1)
Female	2,333,626	19.2	(±1.3)	3,483,316	28.7	(±1.5)	998,077	8.2	(±0.9)
Race§									
White	3,246,700	17.9	(±1.1)	6,243,983	34.5	(±1.4)	1,588,000	8.8	(±0.8)
Black	307,273	19.6	(±3.1)	303,450	19.3	(±2.7)	82,604	5.3	(±1.5)
Other	98,653	20.6	(±9.8)	150,064	31.3	(±8.8)	53,673	¶	¶
Hispanic ethnicity**									
Yes	137,787	18.7	(±4.6)	215,513	29.3	(±5.4)	69,401	8.2	(±3.5)
No	3,469,017	18.1	(±1.1)	6,405,472	33.4	(±1.3)	1,644,370	8.6	(±0.8)
Region††									
Northeast	654,391	14.3	(±1.8)	1,396,180	30.6	(±2.3)	314,159	6.9	(±1.4)
Midwest	959,465	18.7	(±1.9)	1,744,938	34.0	(±2.6)	457,091	8.9	(±1.3)
South	1,304,254	19.9	(±2.1)	2,176,528	33.3	(±2.6)	604,377	9.2	(±1.5)
West	734,516	18.8	(±2.6)	1,379,851	35.3	(±2.7)	348,650	8.9	(±1.7)

*Total population = 8,767.
†Confidence interval. CIs were calculated by multiplying the standard error by 1.96.
§Race data are presented only for whites, blacks, and others because sample sizes for other racial groups were too small for meaningful analysis.
¶Analyses were not performed for subgroups when the relative standard error of an estimate was ≥30%.
**Persons of Hispanic origin can be of any race.
††Northeast=Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont; Midwest=Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin; South=Alabama, Arkansas, Delaware, District of Columbia, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, and West Virginia; and West=Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming.

Source: National Center for Health Statistics, CDC, 1998. Data File Documentation, National Health Interview Second Supplement on Aging, 1994 (Machine-readable data file and documentation), National Center for Health Statistics, Hyattsville, MD.

TABLE 2. Percentage distribution of selected vision and hearing impairments among adults aged ≥70 years — United States, National Health Interview Second Supplement on Aging, 1994*

Sensory characteristic	Population aged ≥70 yrs	%	(95% CI†)
Vision impairments			
(n = 1,397)	3,652,626	18.1	(±1.1)
Blind in one eye	879,215	4.4	(±0.4)
Blind in both eyes	338,492	1.7	(±0.3)
Any other trouble seeing	2,853,053	14.4	(±0.9)
Glaucoma	1,601,041	7.9	(±0.6)
Cataract	5,125,760	24.5	(±1.1)
Lens implant	3,038,524	15.1	(±1.0)
Used magnifier	3,376,160	17.0	(±1.0)
Wear glasses	18,127,245	91.5	(±0.7)
Hearing impairments			
(n = 2,905)	6,697,497	33.2	(±1.3)
Deaf in one ear	1,542,163	8.3	(±0.7)
Deaf in both ears	1,478,727	7.3	(±0.7)
Any other trouble hearing	4,193,478	22.5	(±1.2)
Used hearing aid during preceding 12 months	2,343,064	11.6	(±0.8)
Cochlear implant	28,018	0.1	(±0.1)

*Total population = 8,767.
†Confidence interval. CIs were calculated by multiplying the standard error by 1.96.

Source: National Center for Health Statistics, CDC, 1998. Data File Documentation, National Health Interview Second Supplement on Aging, 1994 (Machine-readable data file and documentation), National Center for Health Statistics, Hyattsville, MD.

limitations were not as extensive as those among older adults who had vision impairments. Approximately 30.7% of older adults with hearing loss reported difficulty walking, whereas 21.3% of those who did not report hearing loss had difficulty walking. In addition, older adults who reported hearing loss were more likely than those without hearing impairments to report difficulty getting outside (17.3% versus 12.0%), getting into and out of bed or a chair (15.1% versus 9.8%), and managing medication (7.7% versus 4.8%). Older adults with hearing impairments reported more occurrences of falls (28.4%) than those without hearing impairments (17.8%) and more occurrences of broken hips (5.4%) than those who did not report hearing impairments (4.4%). Also, older adults with hearing impairments were more likely than those without hearing impairments to report hypertension (46.7% versus 44.3%), heart disease (27.6% versus 18.6%), stroke (11.8% versus 7.8%), and depression (9.9% versus 7.2%).

Difficulty with hearing was not associated with restriction in participation. Older adults with hearing impairments are only slightly less likely than those without hearing impairments to get together with friends (68.6% versus 72.4%). No substantial differences existed for eating at a restaurant or getting together with relatives.

TABLE 3. Selected comorbidities, secondary health conditions, and activity limitations among adults aged ≥70 years who reported a vision and/or hearing impairment or no impairment — National Health Interview Second Supplement on Aging, 1994*

	Vision (n = 1,397)				Hearing (n = 2,905)				Vision and Hearing (n = 675)			
	Reported impairment		No impairment (n = 7,370)		Reported impairment		No impairment (n = 5,862)		Reported impairment		No impairment (n = 8,092)	
Category	%	(95% CI†)	%	(95% CI)	%	(95% CI)	%	(95% CI)	%	(95% CI)	%	(95% CI)
Activity limitations												
Difficulty walking	43.3	(±2.5)	20.2	(±1.0)	30.7	(±1.9)	21.3	(±1.2)	48.3	(±3.7)	22.2	(±1.1)
Difficulty getting outside	28.6	(±2.3)	10.4	(±0.8)	17.3	(±1.6)	12.0	(±1.0)	32.8	(±3.2)	11.9	(±0.8)
Difficulty getting into and out of bed or a chair	22.1	(±2.5)	9.3	(±0.7)	15.1	(±1.6)	9.8	(±0.8)	25.0	(±3.6)	10.4	(±0.8)
Difficulty managing medication	11.8	(±1.7)	4.4	(±0.6)	7.7	(±1.0)	4.8	(±0.6)	13.4	(±2.4)	5.0	(±0.6)
Difficulty preparing meals	18.7	(±2.2)	6.7	(±0.7)	11.6	(±1.3)	7.6	(±0.8)	20.7	(±0.7)	7.8	(±2.9)
Comorbidities and secondary health conditions												
Fallen during preceding 12 months	31.2	(±2.5)	19.2	(±1.0)	28.4	(±1.8)	17.8	(±1.2)	37.4	(±3.7)	19.8	(±1.1)
Broken hip	7.1	(±1.3)	4.2	(±0.5)	5.4	(±0.9)	4.4	(±0.5)	7.6	(±2.0)	4.5	(±0.5)
Hypertension	53.7	(±2.7)	43.1	(±1.3)	46.7	(±2.1)	44.3	(±1.4)	53.4	(±4.0)	44.3	(±1.2)
Heart disease	30.2	(±2.7)	19.7	(±1.0)	27.6	(±1.2)	18.6	(±1.6)	32.4	(±3.6)	20.6	(±1.0)
Stroke	17.4	(±1.8)	7.3	(±0.7)	11.8	(±1.3)	7.8	(±0.8)	19.9	(±2.8)	8.1	(±0.7)
Participation restrictions												
Frequently depressed or anxious	13.3	(±2.1)	7.0	(±0.7)	9.9	(±1.3)	7.2	(±0.8)	15.6	(±2.9)	7.4	(±0.7)
Get together with friends	65.3	(±2.9)	72.5	(±1.5)	68.6	(±1.9)	72.4	(±1.7)	63.3	(±4.0)	71.9	(±1.5)
Get together with relatives	74.2	(±2.5)	76.1	(±1.3)	76.9	(±1.8)	75.2	(±1.4)	75.5	(±3.0)	75.8	(±1.2)
Go out to eat at restaurant	55.7	(±2.5)	65.1	(±1.6)	62.7	(±2.0)	63.7	(±1.7)	55.8	(±3.5)	64.1	(±1.5)

*Total population = 8,767.
†Confidence interval. CIs were calculated by multiplying the standard error by 1.96.

Source: National Center for Health Statistics, CDC, 1998. Data File Documentation, National Health Interview Second Supplement on Aging, 1994 (Machine-readable data file and documentation), National Center for Health Statistics, Hyattsville, MD.

Hearing and Vision Impairments

Approximately 1,724,000 adults (8.6%) of the population aged ≥70 years reported both hearing and vision impairments (Table 1). Older adults who reported vision and hearing impairments were more than two times more likely than their peers without impairments to report difficulty walking (48.3% versus 22.2%), three times more likely to report difficulty getting outside (32.8% versus 11.9%), and almost two and one half times more likely to report difficulty getting into or out of bed or a chair (25.0% versus 10.4%). In addition, older adults who experienced both vision and hearing impairments were three times more likely than their peers without impairments to report difficulty preparing meals (20.7% versus 7.8%) and more likely to report difficulty managing medication (13.4% versus 5.0%).

Furthermore, older adults who reported both vision and hearing loss were more likely than those without either vision or hearing impairments to have a) fallen during the preceding 12 months (37.4% versus 19.8%), b) broken a hip (7.6% versus 4.5%), c) reported a higher prevalence of hypertension (53.4% versus 44.3%), d) reported heart disease (32.2% versus 20.6%), and e) experienced a stroke (two times as likely) (19.9% versus 8.1%) (Table 3). Older adults who experienced both hearing and vision loss reported less participation in social activities (e.g., getting together with friends [63.4% versus 71.9%] or going out to a restaurant [55.8% versus 64.1%]) than their peers without impairments; both groups were equally likely to report getting together with relatives.

Activity Limitations

For adults aged ≥55 years, limitations in basic functional skills were reported most frequently, followed by limitations in ADL and IADL (Table 4). The prevalence of limitation in all three areas of activity increased with advancing age. Among respondents aged ≥85 years, 60.8% reported having difficulty with at least one functional activity. Blacks were more likely than whites to report more difficulties in all areas of activity and in all age groups. A higher percentage of women reported difficulty in the three activity areas and across all age groups. Data for Hispanics and non-Hispanics were comparable for prevalence of activity limitation at younger ages; however, Hispanics had a higher prevalence of activity limitation for adults aged >75 years in ADL and IADL. In the analyses for Hispanics, the confidence intervals were broad, and results should be interpreted with caution. Activity limitation was most prevalent in the south for all three activity areas.

Health-Related Quality of Life

The overall percentages of adults aged ≥55 years who reported fair or poor self-rated health increased substantially with increasing age. Among male respondents, 21.1% of those aged 55–64 years; 25.9%, 65–74 years; and 32.8%, ≥75 years reported fair or poor health. Among female respondents, 20.8% of those aged 55–64 years; 26.5%, 65–74 years; and 34.4%, ≥75 years reported fair or poor health (Table 5). Older black or Hispanic adults and adults who had less than a high school education, earned <$15,000 annual household income, were unable to work, were without health-care coverage, lived in the south, reported diabetes mellitus or consistently high blood

TABLE 4. Percentage of older adults with limitations in functional activities, activities of daily living, and instrumental activities of daily living, by selected sociodemographic characteristics — United States, 1994*

	Age group (yrs)							
	55–64		65–74		75–84		≥85	
Characteristic	%	(95% CI†)	%	(95% CI)	%	(95% CI)	%	(95% CI)
Functional Activities								
Region§								
Northeast	18.4	(±2.0)	22.8	(±2.7)	39.8	(±3.8)	60.1	(± 6.2)
Midwest	19.8	(±1.8)	26.3	(±2.2)	42.1	(±2.9)	56.8	(± 7.1)
South	22.3	(±1.8)	32.5	(±2.5)	46.0	(±3.4)	67.1	(± 5.4)
West	18.6	(±2.1)	27.1	(±3.0)	40.6	(±4.8)	55.3	(± 6.4)
Sex								
Male	17.6	(±1.2)	23.9	(±1.5)	37.0	(±2.5)	50.0	(± 5.0)
Female	22.4	(±1.3)	30.9	(±1.7)	46.2	(±2.2)	65.6	(± 3.9)
Race¶								
White	19.1	(±1.0)	26.5	(±1.4)	42.1	(±1.9)	59.5	(± 3.4)
Black	31.0	(±3.2)	41.0	(±4.1)	52.5	(±5.5)	76.3	(± 8.9)
Other	15.2	(±4.1)	26.3	(±5.9)	26.3	(±11.6)	61.3	(±19.6)
Hispanic ethnicity**								
Yes	22.3	(±4.3)	27.0	(±5.6)	43.7	(±7.6)	77.2	(±11.6)
No	20.0	(±1.0)	27.8	(±1.3)	42.6	(±1.9)	60.0	(± 3.2)
Total	**20.2**	**(±1.0)**	**27.8**	**(±1.3)**	**42.6**	**(±1.8)**	**60.8**	**(± 3.1)**
Activities of Daily Living								
Region								
Northeast	2.9	(±0.9)	4.1	(±1.0)	13.4	(±2.4)	26.6	(± 6.8)
Midwest	3.4	(±0.8)	5.1	(±1.2)	9.8	(±1.8)	23.8	(± 6.2)
South	3.5	(±0.8)	5.9	(±1.0)	14.3	(±1.9)	31.4	(± 5.2)
West	3.7	(±0.9)	5.4	(±1.5)	11.4	(±2.7)	22.1	(± 6.5)
Sex								
Male	3.0	(±0.5)	4.5	(±0.7)	10.6	(±1.6)	21.0	(± 4.4)
Female	3.7	(±0.6)	5.8	(±0.8)	13.5	(±1.3)	29.2	(± 3.8)
Race								
White	3.2	(±0.5)	5.0	(±0.6)	11.9	(±1.1)	25.8	(± 3.2)
Black	4.9	(±1.5)	8.5	(±2.3)	19.0	(±4.7)	35.0	(± 8.0)
Other	2.9	(±1.9)	1.9	(±1.7)	8.3	(±6.8)	33.8	(±27.0)
Hispanic ethnicity								
Yes	3.4	(±1.5)	3.1	(±1.7)	19.1	(±7.0)	29.3	(±17.2)
No	3.4	(±0.5)	5.3	(±0.6)	12.1	(±1.1)	26.5	(± 3.2)
Total	**3.4**	**(±0.4)**	**5.2**	**(±0.6)**	**12.4**	**(±1.1)**	**26.6**	**(± 3.1)**

*For all age groups, the total population for sections on region, sex, and race was 22,486; the sample size for 55–64 years was 8,945; 65–74 years, 8,013; 75–84 years, 4,396; and ≥85 years, 1,132.

†Confidence interval. CIs were calculated by multiplying the standard error by 1.96.

§Northeast=Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont; Midwest=Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin; South=Alabama, Arkansas, Delaware, District of Columbia, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, and West Virginia; and West=Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming.

¶Race data are presented only for whites, blacks, and others because sample sizes for other racial groups were too small for meaningful analysis.

**Person of Hispanic origin can be of any race.

Source: National Center for Health Statistics (1996). Data File Dopcu7mentation, National Health Interview Survey of Disability, Phase I, 1994 (Machine readable data file and documentation), National Center for Health Statistics, Hyattsville, Maryland.

TABLE 4. Percentage of older adults with limitations in functional activities, activities of daily living, and instrumental activities of daily living, by selected sociodemographic characteristics — United States, 1994* — Continued

Characteristic	Age group (yrs) 55–64 %	(95% CI†)	65–74 %	(95% CI)	75–84 %	(95% CI)	≥85 %	(95% CI)
Instrumental Activities of Daily Living								
Region§								
Northeast	10.1	(±1.6)	13.0	(±1.8)	27.8	(±3.3)	53.4	(± 6.8)
Midwest	9.9	(±1.3)	15.3	(±2.0)	27.5	(±3.1)	49.0	(± 7.9)
South	12.4	(±1.4)	18.6	(±2.1)	31.1	(±3.3)	56.9	(± 5.1)
West	9.5	(±1.6)	13.7	(±2.4)	25.1	(±3.9)	50.5	(± 8.3)
Sex								
Male	8.7	(±0.9)	12.4	(±1.2)	21.9	(±2.2)	42.1	(± 5.7)
Female	12.6	(±1.1)	18.1	(±1.4)	32.3	(±2.1)	57.9	(± 3.9)
Race¶								
White	10.3	(±0.8)	15.1	(±1.1)	27.8	(±1.8)	52.1	(± 3.5)
Black	15.0	(±2.5)	21.4	(±2.9)	34.4	(±5.0)	61.3	(±10.9)
Other	9.9	(±3.3)	12.3	(±6.4)	24.3	(±11.8)	67.4	(±21.8)
Hispanic ethnicity**								
Yes	11.5	(±2.9)	13.8	(±4.0)	33.3	(±7.5)	58.7	(±20.1)
No	10.7	(±0.8)	15.7	(±1.1)	28.0	(±1.7)	52.8	(± 3.5)
Total	**10.7**	**(±0.7)**	**15.6**	**(±1.1)**	**28.2**	**(±1.7)**	**53.0**	**(± 3.4)**

*For all age groups, the total population for sections on region, sex, and race was 22,486; the sample size for 55–64 years was 8,945; 65–74 years, 8,013; 75–84 years, 4,396; and ≥85 years, 1,132.

† Confidence interval. CIs were calculated by multiplying the standard error by 1.96.

§ Northeast=Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont; Midwest=Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin; South=Alabama, Arkansas, Delaware, District of Columbia, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, and West Virginia; and West=Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming.

¶ Race data are presented only for whites, blacks, and others because sample sizes for other racial groups were too small for meaningful analysis.

**Person of Hispanic origin can be of any race.

Source: National Center for Health Statistics, CDC, 1996. Data File Documentation, National Health Interview Survey of Disability, Phase I, 1994 (Machine-readable data file and documentation), National Center for Health Statistics, Hyattsville, MD.

pressure, were underweight or overweight, were current smokers, or did not participate in leisure-time activities were consistently more likely than the overall group to report fair or poor health status. Men and women aged 55–64 years and 65–74 years were approximately equally as likely to report fair or poor health (Table 5). Women aged ≥75 years were slightly more likely than men of the same age to report fair or poor health. The pattern of an increased prevalence of a fair or poor self-rated health status with increasing age also occurred in each state and the District of Columbia; the prevalence ranged from 12.9% to 36.3% for adults aged 55–64 years, from 19.9% to 42.2% for adults aged 65–74 years, and from 25.5% to 51.3% for adults aged ≥75 years (Table 6).

The mean number of reported unhealthy days in the preceding 30 days was the same for those aged 55–64 years and 65–74 years (5.6 days) but was higher for adults aged ≥75 years (6.8 days) (Table 8). The mean number of unhealthy days was 1.1 days to 1.2 days higher for women than for men in each age group (Table 7). For each age

TABLE 5. Percentage of fair or poor self-rated health reported by older adults, by selected demographic and risk factors — 50 states and the District of Columbia, Behavioral Risk Factor Surveillance System, 1993–1997*

	Age group (yrs)											
	55–64 (n = 64,919)				65–74 (n = 67,469)				≥75 (n = 46,458)			
	Male (n = 26,820)		Female (n = 38,099)		Male (n = 25,840)		Female (n = 41,629)		Male (n = 13,890)		Female (n = 32,568)	
Characteristic	%	(95% CI†)	%	(95% CI)	%	(95% CI)	%	(95% CI)	%	(95% CI)	%	(95% CI)
Total	21.1	(± 0.8)	20.8	(±0.6)	25.9	(± 0.8)	26.5	(± 0.6)	32.8	(± 1.2)	34.4	(± 0.8)
Race												
White	19.8	(± 0.8)	18.3	(±0.6)	24.7	(± 0.8)	24.6	(± 0.7)	32.1	(± 1.2)	33.5	(± 0.8)
Black	31.4	(± 3.2)	36.5	(±2.4)	39.8	(± 3.5)	43.3	(± 2.6)	42.8	(± 5.1)	46.5	(± 3.3)
Asian/Pacific Islander	16.3	(± 6.0)	19.3	(±6.4)	22.1	(±11.5)	18.2	(± 6.8)	25.6	(±12.5)	28.6	(±13.4)
Native American/ Alaskan Native	23.2	(± 8.2)	44.1	(±9.4)	32.5	(±10.3)	42.0	(±11.1)	48.7	(±15.1)	38.9	(±12.2)
Hispanic ethnicity§												
Yes	33.9	(± 4.6)	37.3	(±4.0)	32.7	(± 5.0)	39.3	(± 4.2)	39.5	(± 8.3)	45.8	(± 6.0)
No	20.3	(± 0.7)	19.7	(±0.6)	25.5	(± 0.8)	25.9	(± 0.6)	32.6	(± 1.2)	34.0	(± 0.8)
Educational level												
Less than high school graduate	42.2	(± 2.2)	43.5	(±1.8)	40.7	(± 1.8)	42.4	(± 1.4)	43.3	(± 2.2)	44.8	(± 1.4)
High school graduate	21.7	(± 1.3)	19.5	(±1.0)	25.9	(± 1.4)	24.9	(± 1.0)	30.7	(± 2.1)	32.7	(± 1.4)
Some college	17.9	(± 1.5)	14.4	(±1.2)	22.1	(± 1.9)	19.2	(± 1.3)	29.0	(± 2.7)	27.2	(± 1.8)
College graduate	9.6	(± 1.0)	8.5	(±1.1)	13.3	(± 1.3)	13.1	(± 1.4)	23.1	(± 2.6)	22.3	(± 1.9)
Annual household income												
<$15,000	51.1	(± 2.8)	44.3	(±1.8)	42.8	(± 2.2)	38.1	(± 1.3)	42.9	(± 2.6)	41.6	(± 1.3)
$15,000–$24,999	28.8	(± 2.0)	22.5	(±1.4)	30.3	(± 1.7)	25.7	(± 1.3)	34.2	(± 2.3)	31.7	(± 1.7)
$25,000–$34,999	21.2	(± 1.9)	16.1	(±1.5)	19.6	(± 1.8)	18.0	(± 1.6)	25.3	(± 3.0)	25.5	(± 2.8)
$35,000–$49,999	14.4	(± 1.6)	10.5	(±1.4)	13.6	(± 1.9)	13.8	(± 2.0)	24.6	(± 3.7)	22.5	(± 3.7)
≥$50,000	10.8	(± 1.2)	13.3	(±1.4)	17.3	(± 2.1)	26.3	(± 2.2)	27.3	(± 3.6)	32.2	(± 2.6)
Employment status												
Employed	12.6	(± 0.8)	11.3	(±0.7)	15.1	(± 1.6)	13.8	(± 1.5)	17.2	(± 4.0)	15.0	(± 3.2)
Out of work	32.0	(± 4.8)	31.9	(±4.0)	31.2	(±13.2)	30.2	(± 7.6)	52.7	(±26.2)	29.1	(±17.3)
Homemaker	37.3	(±19.0)	22.4	(±1.5)	¶	¶	28.1	(± 2.0)	¶	¶	34.3	(± 2.6)
Retired	23.2	(± 1.5)	20.0	(±1.2)	26.5	(± 0.9)	26.1	(± 0.7)	33.4	(± 1.2)	34.0	(± 0.9)
Unable to work	79.3	(± 2.6)	75.5	(±2.5)	75.0	(± 5.5)	74.3	(± 3.6)	64.4	(±14.6)	73.5	(± 5.4)

Marital status												
Married	19.2	(± 0.8)	17.6	(±0.7)	24.1	(± 1.0)	24.0	(± 0.9)	32.0	(± 1.5)	32.8	(± 1.7)
Divorced	28.8	(± 2.3)	25.1	(±1.8)	30.3	(± 2.6)	28.4	(± 2.2)	37.7	(± 6.4)	35.6	(± 3.8)
Widowed	32.9	(±5.2)	28.7	(± 1.7)	34.8	(± 2.4)	29.6	(± 1.0)	34.3	(± 2.1)	35.3	(± 0.9)
Separated	29.7	(±5.5)	40.4	(± 5.0)	39.1	(± 7.5)	47.1	(± 6.8)	37.5	(±11.5)	35.1	(±10.4)
Never married	28.1	(±4.0)	23.9	(± 3.4)	30.5	(± 4.3)	25.8	(± 3.3)	34.2	(± 6.4)	31.4	(± 3.7)
Unmarried couple	20.5	(±8.6)	19.7	(±10.3)	¶	¶	¶	¶	¶	¶	¶	¶
Region**												
Northeast	17.7	(±1.6)	18.4	(± 1.4)	23.4	(± 1.8)	24.5	(± 1.5)	32.5	(± 2.8)	32.3	(± 1.9)
Midwest	19.7	(±1.4)	18.1	(± 1.1)	25.5	(± 1.6)	24.6	(± 1.2)	32.2	(± 2.2)	34.7	(± 1.4)
South	25.4	(±1.3)	25.1	(± 1.0)	29.3	(± 1.4)	31.6	(± 1.1)	37.1	(± 2.1)	39.2	(± 1.3)
West	19.1	(±1.8)	19.0	(± 1.6)	22.7	(± 1.9)	21.4	(± 1.6)	26.7	(± 2.7)	27.9	(± 1.9)
Diabetes mellitus												
Told has diabetes	51.0	(± 3.1)	54.0	(± 2.6)	47.3	(± 2.7)	55.2	(± 2.2)	50.8	(± 3.8)	57.3	(± 2.6)
No diabetes mellitus	17.9	(± 0.7)	17.3	(± 0.6)	22.7	(± 0.8)	22.8	(± 0.6)	30.4	(± 1.2)	31.7	(± 0.8)
Told has high blood pressure												
Never told	16.1	(± 1.0)	14.3	(± 0.9)	22.1	(± 1.2)	19.7	(± 0.9)	28.4	(± 1.8)	29.0	(± 1.3)
Told once	16.5	(± 3.2)	20.7	(± 3.4)	21.5	(± 3.3)	22.0	(± 2.7)	29.2	(± 5.2)	27.6	(± 3.4)
Told ≥2 times	32.0	(± 1.9)	35.0	(± 1.6)	34.2	(± 1.9)	37.5	(± 1.4)	40.7	(± 2.7)	44.1	(± 1.6)
Reported breast cancer												
Yes	††	††	33.2	(± 4.5)	††	††	36.1	(± 3.8)	††	††	40.6	(± 4.4)
No	††	††	20.5	(± 0.6)	††	††	26.1	(± 0.7)	††	††	34.2	(± 0.8)
World Health Organization body mass index category§§												
Underweight	44.3	(±10.9)	29.0	(± 4.9)	48.9	(± 9.8)	38.1	(± 4.1)	51.2	(± 9.4)	39.8	(± 3.2)
Normal	19.6	(± 1.3)	14.4	(± 0.9)	25.4	(± 1.4)	20.4	(± 0.9)	33.7	(± 1.7)	31.1	(± 1.1)
Overweight	18.3	(± 1.0)	19.5	(± 1.1)	22.8	(± 1.2)	26.2	(± 1.1)	28.9	(± 1.8)	34.2	(± 1.5)
Obese (Class I)	26.5	(± 2.2)	30.4	(± 1.9)	33.7	(± 2.6)	35.5	(± 2.0)	37.6	(± 4.7)	42.1	(± 2.8)
Obese (Class II)	34.1	(± 5.1)	41.1	(± 3.7	40.3	(± 5.8)	48.4	(± 4.1)	55.0	(±12.0)	50.1	(± 6.2)
Obese (Class III)	47.1	(± 8.5)	53.7	(± 5.2)	42.1	(±11.0)	59.3	(± 7.2)	¶	¶	57.3	(±11.1)
Cigarette smoking												
Never smoked	15.6	(± 1.3)	19.7	(± 0.9)	18.9	(± 1.2)	24.7	(± 0.8)	29.6	(± 1.9)	33.8	(± 0.9)
Former smoker	21.7	(± 1.1)	20.0	(± 1.1)	27.7	(± 1.2)	28.6	(± 1.3)	34.6	(± 1.6)	36.2	(± 1.7)
Current smoker (<1 ppd¶¶)	27.6	(± 3.1)	23.8	(± 2.1)	34.9	(± 3.7)	29.0	(± 2.5)	37.4	(± 6.1)	35.2	(± 3.9)
Current smoker (≥1 ppd)	27.5	(± 2.1)	25.7	(± 2.0)	33.2	(± 3.0)	29.3	(± 2.6)	39.1	(± 6.9)	35.9	(± 5.6)

TABLE 5. Percentage of fair or poor self-rated health reported by older adults, by selected demographic and risk factors — 50 states and the District of Columbia, Behavioral Risk Factor Surveillance System, 1993–1997* — Continued

	Age group (yrs)											
	55–64 (n = 64,919)				65–74 (n = 67,469)				≥75 (n = 46,458)			
	Male (n = 26,820)		Female (n = 38,099)		Male (n = 25,840)		Female (n = 41,629)		Male (n = 13,890)		Female (n = 32,568)	
Characteristic	%	(95% CI†)	%	(95% CI)	%	(95% CI)	%	(95% CI)	%	(95% CI)	%	(95% CI)
Drank ≥5 alcoholic beverages at least once during preceding month												
Yes	17.0	(± 2.5)	12.3	(± 4.1)	20.8	(± 3.5)	20.6	(± 6.8)	30.5	(± 8.2)	27.7	(±11.4)
No	21.2	(± 1.0)	21.3	(± 0.8)	26.6	(± 1.0)	26.7	(± 0.8)	32.9	(± 1.4)	35.0	(± 1.0)
Participate in leisure-time physical activity												
Yes	17.2	(± 1.2)	14.8	(± 1.0)	19.6	(± 1.3)	18.8	(± 1.0)	26.3	(± 2.1)	24.5	(± 1.4)
No	29.1	(± 2.0)	32.0	(± 1.7)	37.8	(± 2.1)	38.5	(± 1.6)	42.5	(± 2.8)	43.4	(± 1.6)
Has health-care coverage												
Yes	20.0	(± 0.8)	18.9	(± 0.6)	25.7	(± 0.8)	26.3	(± 0.6)	32.8	(± 1.2)	34.4	(± 0.8)
No	31.1	(± 2.9)	35.1	(± 2.3)	35.0	(± 6.4)	35.5	(± 5.8)	31.6	(± 8.1)	35.6	(± 7.0)

*Total population = 178,846. The sample sizes are for known data regarding age, sex, and self-rated health status.
†Confidence interval. CIs were calculated by multiplying the standard error by 1.96.
§Persons of Hispanic origin can be of any race.
¶Data were not reported when the standard error was ≥30% of the prevalence estimate.
**Northeast=Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont; Midwest=Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin; South=Alabama, Arkansas, Delaware, District of Columbia, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, and West Virginia; West=Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming.
††Questions regarding breast cancer were posed to women only.
§§Categories are underweight (<18.5 kg/m^2); normal (18.5 kg/m^2–24.9 kg/m^2); overweight (25.0 kg/m^2–29.9 kg/m^2); obese class I (30.0 kg/m^2–34.9 kg/m^2); obese class II (35.0 kg/m^2–39.9 kg/m^2); and obese class III (≥40 kg/m^2).
¶¶Pack(s) per day.

TABLE 6. Percentage of fair or poor self-rated health reported by older adults, by state and age — 50 states and the District of Columbia, Behavioral Risk Factor Surveillance System, 1993–1997*

State	Age group (yrs)					
	55–64 (n = 64,919)		65–74 (n = 67,469)		≥75 (n = 46,458)	
	%	(95% CI†)	%	(95% CI)	%	(95% CI)
Alabama	28.5	(±3.1)	37.0	(±2.8)	45.5	(±3.8)
Alaska	16.8	(±4.3)	24.7	(±5.8)	28.7	(±9.0)
Arizona	16.7	(±2.9)	20.0	(±3.0)	25.5	(±3.8)
Arkansas	31.1	(±2.9)	36.7	(±3.1)	44.8	(±3.8)
California	20.4	(±2.1)	22.4	(±2.1)	26.6	(±2.7)
Colorado	17.2	(±2.6)	19.9	(±2.9)	29.3	(±4.4)
Connecticut	12.9	(±2.4)	21.9	(±2.7)	30.6	(±3.6)
Delaware	21.8	(±2.5)	25.3	(±2.5)	34.0	(±3.6)
District of Columbia	17.9	(±3.4)	21.9	(±3.7)	26.2	(±5.2)
Florida	20.6	(±1.9)	24.5	(±1.8)	30.8	(±2.3)
Georgia	18.2	(±2.6)	29.2	(±2.5)	48.5	(±4.4)
Hawaii	18.3	(±3.0)	21.5	(±2.7)	34.9	(±4.4)
Idaho	16.8	(±2.2)	23.4	(±2.4)	28.8	(±3.2)
Illinois	20.8	(±2.3)	25.4	(±2.5)	31.6	(±3.2)
Indiana	20.0	(±2.3)	27.5	(±2.7)	40.0	(±3.4)
Iowa	14.3	(±1.8)	20.2	(±2.0)	29.4	(±2.5)
Kansas	15.2	(±2.5)	22.1	(±2.8)	40.0	(±3.6)
Kentucky	33.3	(±2.6)	39.9	(±2.3)	44.7	(±2.9)
Louisiana	27.5	(±3.2)	31.3	(±3.2)	40.9	(±4.4)
Maine	19.0	(±2.8)	24.6	(±3.0)	30.2	(±3.8)
Maryland	18.3	(±1.8)	23.8	(±2.0)	29.3	(±2.7)
Massachusetts	15.8	(±2.7)	22.1	(±2.9)	30.8	(±3.9)
Michigan	18.6	(±2.2)	27.6	(±2.6)	33.3	(±3.6)
Minnesota	13.4	(±1.5)	22.0	(±1.9)	31.3	(±2.4)
Mississippi	35.5	(±3.2)	42.2	(±3.4)	51.3	(±4.2)
Missouri	21.2	(±2.9)	26.6	(±3.0)	37.0	(±3.9)
Montana	17.2	(±2.9)	20.8	(±2.9)	27.9	(±3.9)
Nebraska	15.1	(±2.3)	22.8	(±2.5)	37.4	(±3.0)
Nevada	18.9	(±3.3)	24.0	(±4.0)	29.2	(±5.6)
New Hampshire	14.0	(±2.5)	20.5	(±2.9)	29.6	(±4.4)
New Jersey	19.5	(±3.0)	23.7	(±3.0)	31.4	(±4.1)
New Mexico	20.9	(±3.2)	27.0	(±3.7)	31.7	(±4.5)
New York	17.8	(±2.1)	24.3	(±2.4)	33.6	(±3.2)
North Carolina	27.7	(±2.4)	34.4	(±2.4)	43.7	(±3.2)
North Dakota	20.1	(±2.8)	24.5	(±2.6)	37.9	(±3.2)
Ohio	22.1	(±3.1)	25.3	(±3.0)	34.5	(±4.0)
Oklahoma	22.6	(±2.8)	23.0	(±2.3)	37.6	(±3.5)
Oregon	19.6	(±2.1)	21.8	(±2.1)	27.0	(±2.8)
Pennsylvania	19.9	(±1.9)	25.2	(±2.0)	32.8	(±2.8)
Rhode Island	23.2	(±3.2)	28.1	(±3.4)	31.7	(±3.9)
South Carolina	27.3	(±2.9)	33.4	(±3.0)	42.8	(±4.5)
South Dakota	18.3	(±2.6)	23.5	(±2.6)	32.3	(±2.9)
Tennessee	30.9	(±2.5)	37.6	(±2.6)	41.7	(±3.1)
Texas	26.7	(±3.1)	32.1	(±3.6)	38.2	(±4.6)
Utah	18.1	(±2.6)	23.8	(±3.0)	33.9	(±3.8)
Vermont	18.2	(±2.2)	21.9	(±2.5)	30.8	(±3.2)
Virginia	20.1	(±2.7)	25.8	(±3.0)	32.7	(±4.7)
Washington	14.9	(±1.8)	20.2	(±2.2)	27.4	(±2.9)
West Virginia	36.3	(±2.6)	39.1	(±2.6)	45.0	(±3.1)
Wisconsin	13.6	(±2.4)	22.2	(±2.9)	28.6	(±3.8)
Wyoming	18.2	(±2.6)	22.1	(±3.0)	31.6	(±4.3)
Total	**21.0**	**(±0.5)**	**26.2**	**(±0.5)**	**33.8**	**(±0.7)**

*Total population = 178,846. The sample sizes are for known data regarding age, sex, and self-rated health status.

†Confidence interval. CIs were calculated by multiplying the standard error by 1.96.

TABLE 7. Mean number of unhealthy days during the preceding 30 days, by selected demographic and risk factors — 50 states and the District of Columbia, Behavioral Risk Factor Surveillance System, 1993–1997*

	Age group (yrs)											
	55–64 (n = 63,138)				65–74 (n = 64,933)				≥75 (n = 43,549)			
	Male (n = 26,258)		Female (n = 36,880)		Male (n = 25,144)		Female (n = 39,789)		Male (n = 13,233)		Female (n = 30,316)	
Characteristic	Mean	(95% CI†)	Mean	(95% CI)	Mean	(95% CI)	Mean	(95% CI)	Mean	(95% CI)	Mean	(95% CI)
Overall	5.0	(±0.2)	6.2	(±0.2)	5.0	(±0.2)	6.1	(±0.2)	6.1	(±0.3)	7.2	(±0.2)
Race												
White	4.9	(±0.2)	6.0	(±0.2)	4.9	(±0.2)	6.0	(±0.2)	6.0	(±0.3)	7.1	(±0.2)
Black	5.9	(±0.8)	7.6	(±0.6)	6.3	(±0.8)	7.2	(±0.6)	7.3	(±1.2)	9.1	(±0.9)
Asian/Pacific Islander	3.2	(±1.1)	4.4	(±1.4)	4.3	(±2.1)	4.1	(±1.2)	4.0	(±2.6)	7.2	(±3.3)
Native American/ Alaskan Native	6.5	(±2.1)	9.6	(±2.4)	7.3	(±1.9)	5.7	(±1.9)	5.4	(±2.7)	6.6	(±2.4)
Hispanic ethnicity§												
Yes	7.5	(±1.1)	7.8	(±1.0)	7.1	(±1.3)	8.0	(±1.0)	7.3	(±2.0)	8.1	(±1.4)
No	4.8	(±0.2)	6.1	(±0.2)	4.9	(±0.2)	6.0	(±0.2)	6.0	(±0.3)	7.1	(±0.2)
Educational level												
Less than high school graduate	8.6	(±0.6)	9.4	(±0.5)	7.0	(±0.4)	8.0	(±0.3)	7.6	(±0.6)	8.7	(±0.4)
High school graduate	4.8	(±0.3)	5.9	(±0.2)	4.8	(±0.3)	5.9	(±0.2)	5.5	(±0.5)	6.8	(±0.3)
Some college	4.7	(±0.4)	5.7	(±0.3)	4.6	(±0.4)	5.5	(±0.3)	5.5	(±0.6)	6.4	(±0.4)
College graduate	3.3	(±0.3)	4.3	(±0.3)	3.5	(±0.3)	4.6	(±0.4)	5.0	(±0.6)	5.7	(±0.5)
Annual household income												
<$15,000	11.8	(±0.8)	10.7	(±0.5)	8.2	(±0.6)	8.2	(±0.3)	8.5	(±0.7)	8.5	(±0.3)
$15,000–$24,999	6.3	(±0.5)	6.4	(±0.3)	5.4	(±0.4)	6.0	(±0.3)	5.8	(±0.5)	6.9	(±0.4)
$25,000–$34,999	4.6	(±0.4)	5.4	(±0.4)	4.1	(±0.4)	4.7	(±0.4)	4.7	(±0.7)	5.6	(±0.6)
$35,000–$49,999	3.6	(±0.4)	4.6	(±0.4)	3.2	(±0.5)	4.6	(±0.5)	5.0	(±0.8)	5.3	(±0.8)
≥$50,000	3.2	(±0.3)	4.8	(±0.4)	4.1	(±0.4)	5.8	(±0.5)	5.4	(±0.8)	6.9	(±0.6)
Employment status												
Employed	3.0	(±0.2)	4.3	(±0.2)	3.1	(±0.4)	4.0	(±0.4)	3.2	(±0.8)	3.9	(±0.9)
Out of work	9.7	(±1.4)	8.8	(±1.0)	7.8	(±3.7)	7.3	(±1.8)	16.0	(±7.8)	6.1	(±3.1)
Homemaker	5.5	(±3.1)	6.2	(±0.4)	¶	¶	6.3	(±0.5)	¶	¶	6.7	(±0.6)
Retired	5.1	(±0.4)	5.5	(±0.3)	5.0	(±0.2)	6.0	(±0.2)	6.1	(±0.3)	7.1	(±0.2)
Unable to work	20.5	(±0.8)	20.3	(±0.7)	19.2	(±1.8)	18.0	(±1.2)	16.1	(±4.2)	20.2	(±1.6)

Marital status												
Married	4.5	(±0.2)	5.5	(±0.2)	4.7	(±0.2)	5.7	(±0.2)	5.7	(±0.3)	6.9	(±0.4)
Divorced	6.6	(±0.5)	7.3	(±0.5)	6.3	(±0.6)	7.0	(±0.5)	6.3	(±1.5)	9.0	(±1.1)
Widowed	8.3	(±1.4)	7.8	(±0.5)	6.0	(±0.5)	6.7	(±0.3)	7.0	(±0.5)	7.3	(±0.2)
Separated	6.8	(±1.4)	9.7	(±1.4)	8.0	(±1.9)	9.1	(±1.6)	6.8	(±2.7)	9.9	(±3.0)
Never married	5.9	(±1.0)	6.9	(±0.9)	5.9	(±1.0)	5.4	(±0.7)	6.0	(±1.5)	6.2	(±0.9)
Unmarried couple	9.8	(±3.7)	5.7	(±2.5)	6.4	(±3.6)	†	†	†	†	†	†
Region**												
Northeast	4.8	(±0.4)	6.1	(±0.4)	4.7	(±0.4)	5.9	(±0.3)	6.3	(±0.7)	7.0	(±0.5)
Midwest	4.6	(±0.3)	5.7	(±0.3)	5.1	(±0.4)	6.0	(±0.3)	6.0	(±0.5)	7.4	(±0.3)
South	5.2	(±0.3)	6.3	(±0.3)	5.1	(±0.3)	6.3	(±0.3)	6.5	(±0.5)	7.5	(±0.3)
West	5.3	(±0.5)	6.6	(±0.4)	4.9	(±0.4)	6.2	(±0.4)	5.1	(±0.6)	6.6	(±0.5)
Diabetes mellitus												
Told has diabetes	10.2	(±0.8)	11.1	(±0.6)	9.0	(±0.7)	10.4	(±0.6)	9.1	(±0.9)	11.2	(±0.7)
No diabetes mellitus	4.5	(±0.2)	5.7	(±0.2)	4.4	(±0.2)	5.6	(±0.2)	5.6	(±0.3)	6.7	(±0.2)
Told has high blood pressure												
Never told	4.1	(±0.2)	5.0	(±0.2)	4.3	(±0.3)	5.0	(±0.2)	5.1	(±0.4)	6.2	(±0.3)
Told once	3.9	(±0.7)	5.7	(±0.7)	4.4	(±0.8)	5.3	(±0.6)	4.9	(±1.3)	5.8	(±0.8)
Told ≥2 times	6.9	(±0.5)	8.7	(±0.4)	6.2	(±0.4)	7.9	(±0.3)	7.5	(±0.6)	9.1	(±0.4)
Reported breast cancer												
Yes	††	††	7.8	(±1.0)	††	††	8.0	(±1.0)	††	††	9.1	(±1.0)
No	††	††	6.1	(±0.2)	††	††	6.1	(±0.2)	††	††	7.1	(±0.2)
World Health Organization body mass index category§§												
Underweight	10.3	(±3.0)	8.2	(±1.3)	8.9	(±2.0)	8.6	(±1.0)	14.0	(±2.8)	8.9	(±0.9)
Normal	4.7	(±0.3)	4.9	(±0.2)	4.9	(±0.3)	5.2	(±0.2)	5.9	(±0.4)	6.5	(±0.3)
Overweight	4.6	(±0.3)	6.1	(±0.3)	4.5	(±0.3)	5.9	(±0.3)	5.3	(±0.4)	7.3	(±0.4)
Obese (Class I)	6.1	(±0.6)	7.9	(±0.5)	6.2	(±0.6)	8.0	(±0.5)	7.4	(±1.2)	8.5	(±0.7)
Obese (Class II)	6.3	(±1.0)	10.2	(±1.0)	8.6	(±1.5)	10.6	(±1.0)	12.0	(±3.6)	11.1	(±1.7)
Obese (Class III)	8.5	(±1.9)	13.0	(±1.3)	11.0	(±2.7)	10.8	(±1.7)	9.4	(±6.7)	12.6	(±3.0)
Cigarette smoking												
Never smoked	3.9	(±0.3)	5.6	(±0.2)	4.0	(±0.3)	5.6	(±0.2)	5.1	(±0.4)	6.9	(±0.2)
Former smoker	5.1	(±0.3)	6.5	(±0.3)	5.2	(±0.3)	6.8	(±0.3)	6.6	(±0.4)	7.9	(±0.4)
Current smoker (<1 ppd††)	6.0	(±0.7)	7.0	(±0.5)	6.6	(±0.9)	6.5	(±0.6)	6.6	(±1.4)	7.6	(±1.0)
Current smoker (≥1 ppd)	6.5	(±0.6)	7.8	(±0.5)	6.4	(±0.6)	7.3	(±0.7)	7.3	(±1.6)	8.0	(±1.3)

TABLE 7. Mean number of unhealthy days during the preceding 30 days, by selected demographic and risk factors — 50 states and the District of Columbia, Behavioral Risk Factor Surveillance System, 1993–1997* — Continued

	Age group (yrs)											
	55–64 (n = 63,138)				65–74 (n = 64,933)				≥75 (n = 43,549)			
	Male (n = 26,258)		Female (n = 36,880)		Male (n = 25,144)		Female (n = 39,789)		Male (n = 13,233)		Female (n = 30,316)	
Characteristic	Mean	(95% CI†)	Mean	(95% CI)	Mean	(95% CI)	Mean	(95% CI)	Mean	(95% CI)	Mean	(95% CI)
Drank ≥5 alcoholic beverages at least once during preceding month												
Yes	4.3	(±0.6)	7.1	(±1.4)	4.0	(±0.7)	4.3	(±1.1)	6.6	(±2.1)	6.8	(±2.6)
No	5.1	(±0.2)	6.2	(±0.2)	5.1	(±0.2)	6.2	(±0.2)	6.1	(±0.3)	7.3	(±0.2)
Participate in leisure-time physical activity												
Yes	4.2	(±0.3)	4.9	(±0.2)	3.8	(±0.3)	4.8	(±0.2)	4.5	(±0.5)	5.0	(±0.3)
No	6.6	(±0.5)	8.6	(±0.4)	7.3	(±0.6)	8.2	(±0.4)	8.4	(±0.7)	9.2	(±0.4)
Has health-care coverage												
Yes	4.7	(±0.2)	5.9	(±0.2)	5.0	(±0.2)	6.1	(±0.2)	6.0	(±0.3)	7.2	(±0.2)
No	7.5	(±0.8)	8.4	(±0.6)	7.0	(±1.8)	7.3	(±1.3)	7.5	(±2.1)	9.0	(±1.9)

*Total population = 171,620. The sample sizes are for known data regarding age, sex, and questions on unhealthy days.
†Confidence interval. CIs were calculated by multiplying the standard error by 1.96.
§Persons of Hispanic origin can be of any race.
¶Data were not reported when the standard error was ≥30% of the prevalence estimate.
**Northeast=Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont; Midwest=Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin; South=Alabama, Arkansas, Delaware, District of Columbia, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, and West Virginia; and West=Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming.
††Questions regarding breast cancer were posed to women only.
§§Categories are underweight (<18.5 kg/m^2); normal (18.5 kg/m^2–24.9 kg/m^2); overweight (25.0 kg/m^2–29.9 kg/m^2); obese class I (30.0 kg/m^2–34.9 kg/m^2); obese class II (35.0 kg/m^2–39.9 kg/m^2); and obese class III (≥40 kg/m^2).
¶¶Pack(s) per day.

and sex subgroup, adults reported having higher levels of unhealthy days than other respondents if they had less than a high school education or reported an annual household income of <$15,000, an inability to work, nonparticipation in any physical activity during the preceding month, or not having health-care coverage. Respondents who had been told by a physician that they had diabetes, or that their blood pressure was higher than normal on two or more occasions, or who were current smokers, reported higher mean unhealthy days than other respondents. For each age group, women who reported having breast cancer also reported higher numbers of unhealthy days than those who did not report having breast cancer. Conversely, for each age group, adults who reported the lowest levels of unhealthy days also reported the following: having a college degree, having health-care coverage, having never smoked, having some level of physical activity, not having diabetes or hypertension, being currently employed, being a married man, being an overweight man*†, or being a normal-weight woman*.

Some relations between the number of unhealthy days and characteristics of respondents were more complex (Table 7). For example, men and women who had less than a high school education reported the highest number of unhealthy days in the youngest age group (55–64 years) versus the two oldest age groups, whereas men and women who had college degrees reported progressively higher levels of unhealthy days with increased age. Similarly, adults who had annual household incomes of <$15,000 reported a higher mean number of unhealthy days in the youngest age group (55–64 years) versus the two oldest age groups, whereas those who had annual household incomes of ≥$50,000 reported a progressively higher mean number of unhealthy days with increased age. Men and women who reported the fewest numbers of unhealthy days for each age and sex group resided in the midwest (aged 55–64 years), northeast (aged 65–74 years), and west (aged ≥75 years). Men and women (aged 55–64 years) who resided in the west and men and women (aged 65–74 years and ≥75 years) who resided in the south reported the highest mean number of unhealthy days for each age and sex group.

At the state level (with the exception of Alaska and Tennessee), the mean number of unhealthy days reported by the oldest age group (≥75 years) was consistently higher than the mean number reported in the next oldest age group (65–74 years) (Table 8). However, differences in the mean number of unhealthy days between adults aged 55–64 years and aged 65–74 years were not statistically significant ($p \geq 0.05$) for most states. For each state and the District of Columbia, the mean number of unhealthy days for adults aged 55–64 years ranged from 3.4 days to 7.7 days; for adults aged 65–74 years, from 3.4 days to 7.2 days; and for adults aged ≥75 years, from 4.4 days to 9.6 days (Table 8).

For men and women aged ≥65 years, a direct relation existed between their self-rated health status and mean number of unhealthy days (Figure); however, the numbers of mean unhealthy days were substantially smaller for those who reported excellent, very good, or good health status (range = 1.4 days–4.3 days) compared with the mean number of unhealthy days of respondents who reported a fair or poor health status (range = 9.1 days–22.9 days). Although separate analyses (not shown) indicated that most unhealthy days are attributed to days when physical health was not good

*World Health Organization categories of body mass index.
†The WHO category "overweight" is misleading because it does not include those who are very overweight (i.e., "obese").

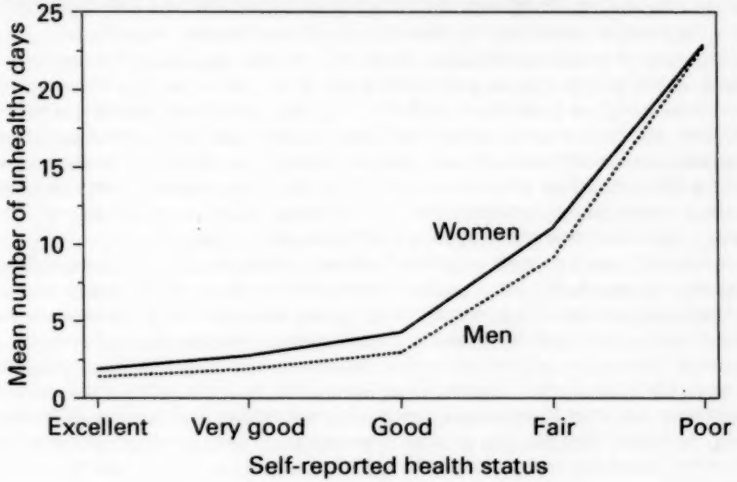
TABLE 8. Mean number of unhealthy days during the preceding 30 days, by state and age — 50 states and the District of Columbia, Behavioral Risk Factor Surveillance System, 1993–1997*

State	Age group (yrs)					
	55–64 (n = 63,138)		65–74 (n = 64,933)		≥75 (n = 43,549)	
	%	(95% CI†)	%	(95% CI)	%	(95% CI)
Alabama	5.9	(±0.7)	6.6	(±0.6)	7.7	(±1.0)
Alaska	5.2	(±1.1)	6.5	(±1.6)	5.0	(±2.1)
Arizona	4.9	(±0.7)	4.2	(±0.7)	4.5	(±0.8)
Arkansas	6.3	(±0.7)	6.5	(±0.7)	7.7	(±1.0)
California	6.4	(±0.5)	6.0	(±0.5)	6.1	(±0.6)
Colorado	6.0	(±0.7)	5.6	(±0.7)	6.9	(±1.0)
Connecticut	4.8	(±0.8)	4.2	(±0.6)	6.0	(±0.9)
Delaware	6.0	(±0.7)	5.4	(±0.6)	7.3	(±0.9)
District of Columbia	3.4	(±0.8)	3.9	(±0.9)	4.4	(±1.2)
Florida	6.0	(±0.5)	5.9	(±0.4)	6.9	(±0.6)
Georgia	4.7	(±0.6)	5.3	(±0.5)	9.6	(±1.1)
Hawaii	4.4	(±0.7)	4.0	(±0.6)	4.9	(±0.9)
Idaho	5.4	(±0.6)	5.8	(±0.6)	6.8	(±0.8)
Illinois	5.2	(±0.5)	5.4	(±0.6)	6.2	(±0.7)
Indiana	6.2	(±0.6)	6.9	(±0.7)	8.8	(±0.9)
Iowa	4.9	(±0.5)	5.5	(±0.5)	6.6	(±0.6)
Kansas	4.0	(±0.6)	4.5	(±0.6)	5.7	(±0.8)
Kentucky	7.7	(±0.7)	7.2	(±0.6)	8.4	(±0.7)
Louisiana	5.9	(±0.8)	5.8	(±0.8)	6.4	(±1.0)
Maine	5.1	(±0.7)	5.2	(±0.7)	5.7	(±0.9)
Maryland	4.5	(±0.4)	5.2	(±0.5)	5.9	(±0.7)
Massachusetts	5.8	(±0.7)	5.5	(±0.7)	7.0	(±1.0)
Michigan	5.4	(±0.5)	6.3	(±0.6)	7.4	(±0.9)
Minnesota	4.8	(±0.4)	6.1	(±0.5)	7.8	(±0.6)
Mississippi	6.4	(±0.8)	6.2	(±0.8)	7.1	(±1.0)
Missouri	5.5	(±0.7)	5.7	(±0.7)	8.1	(±1.0)
Montana	5.8	(±0.8)	5.0	(±0.7)	6.0	(±0.9)
Nebraska	4.8	(±0.6)	5.6	(±0.6)	6.8	(±0.7)
Nevada	6.1	(±0.9)	6.0	(±0.8)	6.6	(±1.3)
New Hampshire	4.7	(±0.7)	5.5	(±0.8)	5.9	(±1.0)
New Jersey	5.5	(±0.7)	6.0	(±0.7)	6.7	(±1.0)
New Mexico	5.6	(±0.8)	6.3	(±0.9)	7.2	(±1.1)
New York	5.2	(±0.5)	5.2	(±0.6)	7.1	(±0.8)
North Carolina	5.1	(±0.5)	5.4	(±0.5)	7.2	(±0.8)
North Dakota	5.5	(±0.7)	5.6	(±0.6)	7.8	(±0.8)
Ohio	5.1	(±0.7)	4.7	(±0.6)	5.6	(±0.9)
Oklahoma	4.9	(±0.7)	3.4	(±0.5)	5.1	(±0.7)
Oregon	5.9	(±0.5)	5.3	(±0.5)	5.9	(±0.6)
Pennsylvania	6.0	(±0.5)	5.5	(±0.5)	6.7	(±0.7)
Rhode Island	6.4	(±0.8)	6.1	(±0.8)	6.5	(±0.9)
South Carolina	5.9	(±0.7)	4.8	(±0.6)	7.2	(±1.0)
South Dakota	4.7	(±0.6)	4.6	(±0.6)	5.8	(±0.7)
Tennessee	6.2	(±0.6)	6.5	(±0.6)	6.5	(±0.7)
Texas	6.4	(±0.8)	6.3	(±0.9)	7.4	(±1.2)
Utah	5.9	(±0.7)	5.8	(±0.7)	7.7	(±0.9)
Vermont	5.1	(±0.5)	4.8	(±0.6)	6.1	(±0.8)
Virginia	4.7	(±0.6)	5.6	(±0.7)	6.8	(±1.2)
Washington	5.3	(±0.5)	5.2	(±0.6)	5.7	(±0.7)
West Virginia	6.9	(±0.6)	6.0	(±0.6)	6.8	(±0.7)
Wisconsin	4.7	(±0.6)	5.8	(±0.7)	7.3	(±1.0)
Wyoming	5.4	(±0.7)	5.0	(±0.7)	6.6	(±1.1)
Total	**5.6**	**(±0.1)**	**5.6**	**(±0.1)**	**6.8**	**(±0.2)**

*Total population = 171,620. The sample sizes are for known data regarding age, sex, and questions on unhealthy days.

†Confidence interval. CIs were calculated by multiplying the standard error by 1.96.

FIGURE. Mean number of unhealthy days in the preceding 30 days in adults aged ≥65 years, by self-reported health status and sex — 50 states and the District of Columbia, Behavioral Risk Factor Surveillance System, 1993–1997



versus when mental health was not good for adults aged ≥65 years, a substantial percentage of these respondents (6.2%) reported ≥2 weeks of recent poor mental health.

DISCUSSION

Chronic illnesses and their related activity limitations are a major health problem for older adults. These illnesses and limitations involve reduced functioning, cognitive impairments, depressive symptoms, the need for extended care, and burdensome health-care costs (*11,12*). Large declines have been reported in the proportions of older U.S. adults who are functionally impaired (*13*). However, preserving a good quality of life is as important as increasing life expectancy; the ability of older adults to function independently is a critically important public health issue (*14*).

Vision and Hearing Impairments

Compared with the information available regarding risk factors for specific diseases, few studies have examined risk factors for age-related functional decrements (*15*). Among older adults in communities, available research identified hearing and vision impairments as important risk factors that lead to functional decline and increased mortality as well as imbalance, hip fracture, and depression (*16–24*). Moreover, declining hearing and vision in older adults pose important challenges for families and family caregivers (*25–27*).

This report examined the important relation between sensory loss and activity limitations. Sensory impairments are common among older adults. Eighteen percent of adults aged ≥70 years reported blindness in one eye, blindness in both eyes, or any other trouble seeing; 33.2% reported hearing impairments, and 8.6% reported both hearing and vision impairments. Because these experiences are common, they are often overlooked or dismissed (*28*). Moreover, normal, age-related changes in hearing and vision might not be separated from abnormal sensory changes that can compromise function. In addition, both hearing and vision impairments are not visible disabilities, and both might lead to misdiagnosis or misunderstanding. Because vision and hearing occur on a continuum, discerning when a sensory impairment arises might be difficult. When changes in hearing and vision exceed normal age-related changes, they might begin to compromise the ability of an older adult to perform routine activities that define social roles and affect quality of life (*29*).

In these analyses, a pattern occurred from examining the comorbidities and activity limitations among adults who reported hearing impairments, vision impairments, and both hearing and vision impairments. Older adults who had hearing impairments also reported more comorbidities than their nonhearing-impaired peers. Similarly, older adults who had vision impairments also reported more comorbidities and substantially more difficulty performing activities; those who reported both hearing and vision impairments reported increasingly greater comorbidities and greater difficulty performing activities. Despite the greater prevalence of functional impairments, these findings indicated that older adults who had sensory loss sustained valued social participation roles, although they had multiple activity limitations (*30,31*).

Untangling the relation among sensory loss, comorbidities and secondary conditions, and activity limitations poses an important challenge for public health and the development of public policy. For example, regarding the relation between sensory limitations and activity limitations, more information is needed concerning the relation between underlying conditions, activity limitations, and secondary conditions. How do difficulty walking and difficulty getting outside affect the development of heart disease and hypertension among older persons with sensory impairments? How does difficulty preparing meals affect the nutrition of older persons who have problems seeing and hearing? Regarding the relation between activity limitations and environment, more information is needed concerning the effect of environmental accommodations or supports on the ability of adults with sensory impairments to live independently. For example, would the presence of sidewalks and larger print size on medicine bottles make a difference in the general health and independence of older adults with vision impairments? How does environmental noise hinder older adults from understanding conversation? Finally, more information is needed regarding the strategies that many older adults who have a disability employ to sustain participation in the community.

Activity Limitations

Advancing age is associated with increased likelihood of limitation in functional activities, ADLs, and IADLs, regardless of demographic and geographic factors (*32–34*). In all three activity domains, the differences that occurred between men and women as age increased support earlier reports of higher prevalence of limitation for

women and higher mortality for men (*34*). The racial disparity in prevalence of limitations in functional activities, ADLs, and IADLs is similar to those noted by other researchers (*35*). Reduction in ability to perform functional activities, ADLs, and IADLs are associated with an increased need for social services and medical care (*34*). Despite reports that indicate that the prevalence of limitations is decreasing (*13*), increases in the absolute number of adults who experience limitation in activities will have substantial effects on the service delivery and health-care systems and on the demand for institutionalization (*34*).

The concept of what constitutes a disability continues to evolve (*3*). The World Health Organization is revising its *International Classification of Impairments, Disabilities, and Handicaps* report and will emphasize the role of environmental factors in mitigating or exacerbating the effect of activity limitations in daily life (*36,37*). Regarding activity limitations, population estimates were analyzed for three broad areas (i.e., functional activities, IADLs, and ADLs) related to independent living — the major activity for adults aged ≥65 years. Unfortunately, data regarding environmental factors were not available from NHIS. The extent to which environmental factors might affect the portion of the older adult population that is affected by limitations in functional activities, ADLs, or IADLs, is not addressed in this report. In addition, data were taken from the special disability supplement in the 1994 NHIS. Continued and improved monitoring of the older adult population requires that instruments (e.g., NHIS) include in the recurring core routine questions concerning specific activities and environmental factors that affect independent living.

Health-Related Quality of Life

Chronic health conditions and increased levels of activity limitations are associated with lower levels of HRQOL (*38,39*). Some efforts to improve the health of older adults by prevention and treatment of specific conditions have been successful but are difficult to evaluate because of problems of competing morbidity in this population (5). The best measures of HRQOL are believed to be each person's subjective experience (*40*). This report included two self-reported measures of overall health: a general rating of health status and an estimate of the number of days in the preceding 30 days when physical or mental health was perceived as not good. The direct relation between self-rated health and number of unhealthy days supported the validity of both measures for measuring HRQOL of older adults. Findings also indicated that older adults who reported either fair or poor self-rated health also reported substantially greater numbers of recent unhealthy days than those who reported excellent, very good, or good self-rated health. The number of unhealthy days for older adults — as a continuous measure of both physical and mental health perception — is a useful index for identifying vulnerable subpopulations. Previous analyses of the mental health component of unhealthy days suggested the importance of mental health to the quality of life of older adults and the potential value of prevention and treatment of psychiatric disorders in this population (*38,41*).

A consistent relation exists between the mean number of unhealthy days and socioeconomic characteristics that have been associated with increased disease, disability, and mortality (e.g., unemployment and lower levels of income and education), and this finding confirmed earlier findings in a general adult population study (*42*).

Both men and women in their preretirement years (aged 55–64 years) who had the least education and lowest annual household income reported higher numbers of unhealthy days than their counterparts with the least education and lowest annual household income reported in the two older age groups. This finding was in contrast to age-associated increases in the mean number of unhealthy days for the highest socioeconomic status(SES) groups (i.e., college graduates and adults with annual household incomes of ≥$50,000) and produced a narrowing of HRQOL disparities with older age between the upper and lower SES groups. These findings might reflect health gains from improved access to health and social services when adults become eligible for Medicare, social security, and other retirement benefits. Researchers also found that respondents who said that they were unable to work reported substantially high levels of unhealthy days. This relation had also been observed among working-aged adults in other analyses of BRFSS data and has been documented as highly correlated at the state and county levels with 1990 U.S. Bureau of the Census estimates of severe work disability (*43*).

This report has several limitations. NHIS is limited to the civilian, noninstitutionalized population and might underrepresent the oldest of the elderly, who are more likely to reside in institutions. Furthermore, reports could be provided by the reference person directly or by a proxy respondent. Of the 22,486 adults in the 1994 NHIS-D1 sample of adults aged >54 years, 28.3% were proxy respondents.

The 1994 SOA II has two limitations. First, the dataset does not include adults aged 65–69 years; this exclusion makes comparability with some cohorts more difficult because research concerning aging typically includes adults aged ≥65 years. Second, questions regarding vision and hearing are limited because they do not address functional activities. Questions regarding the ability to read newspaper print, recognize a street sign, or hear conversation in a crowded room are generally more useful when activity limitation and participation are examined.

BRFSS has several limitations. First, like NHIS, BRFSS is limited to the civilian, noninstitutionalized population and might underrepresent the oldest of the elderly, who are more likely to reside in institutions. Second, BRFSS does not include in the sampling frame adults who did not have telephones (i.e., approximately 5% of U.S. households) (*44*). However, differences in geographic and demographic characteristics of households with and without telephones were small according to one recent study, suggesting that this limitation might not limit generalizability (*45*). Third, BRFSS samples might include only small numbers in subgroups of particular interest (e.g., Native Americans or Asians/Pacific Islanders). Estimates for these subgroups were accurate but less precise than estimates for subgroups with larger numbers of respondents.

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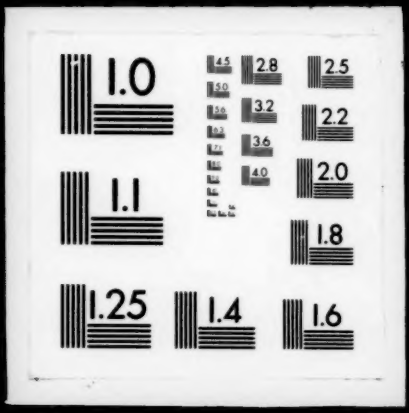
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